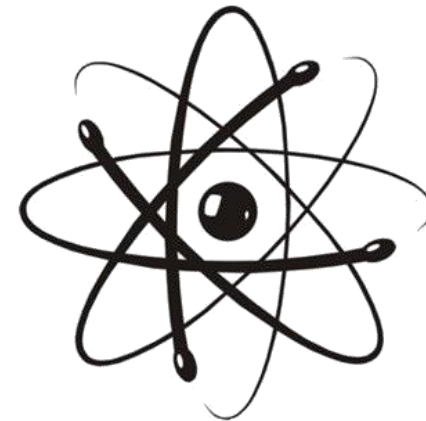


Isomeria Espacial (Óptica II)

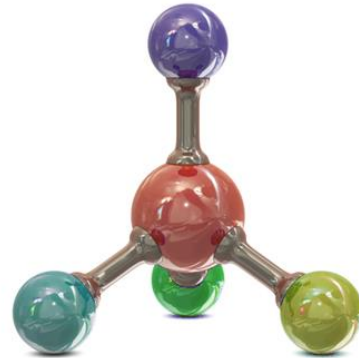
Prof. Francis Isotton
Química



Condições para que ocorra isomeria óptica

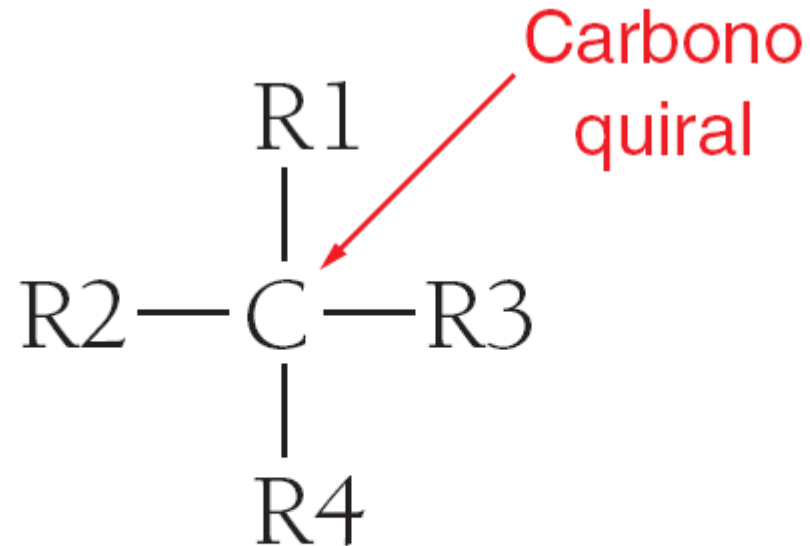
Assimetria molecular

Carbano assimétrico



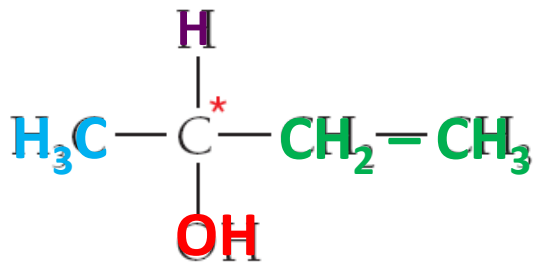
Isomeria Óptica

Obs : Carbono assimétrico ou quiral

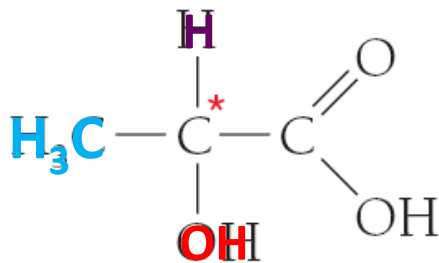


R1, R2, R3 e R4, todos diferentes entre si

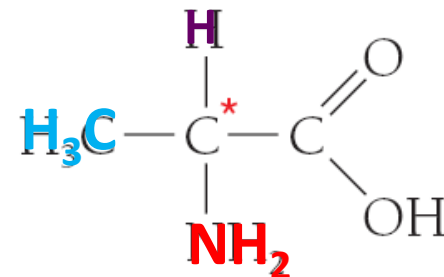
Isomeria Óptica



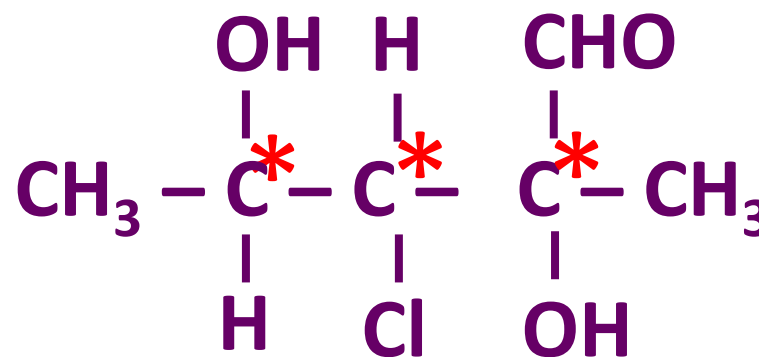
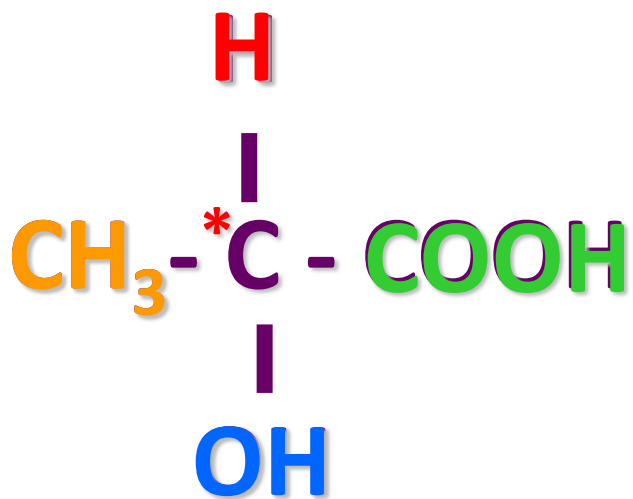
butan-2-ol



ácido láctico

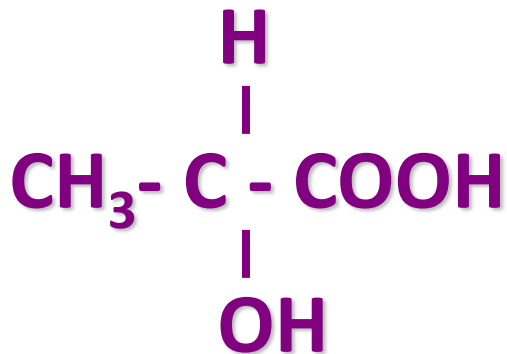
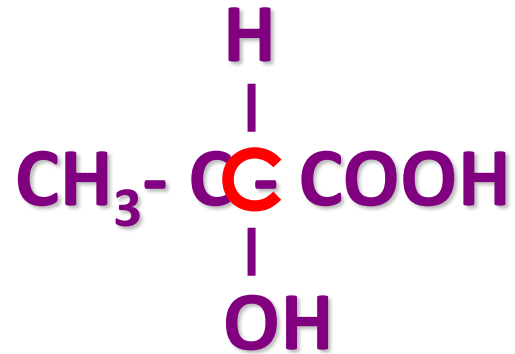


alanina (um aminoácido)

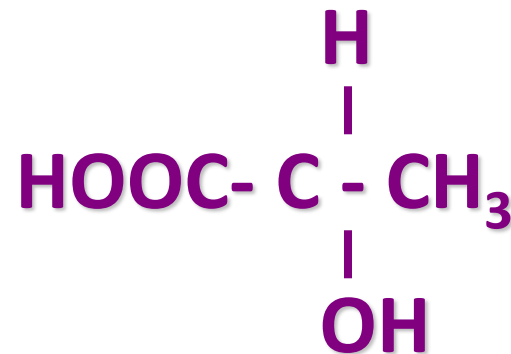


Isomeria Óptica

1º caso (um átomo de carbono assimétrico)



Ác. (+) d-Láctico

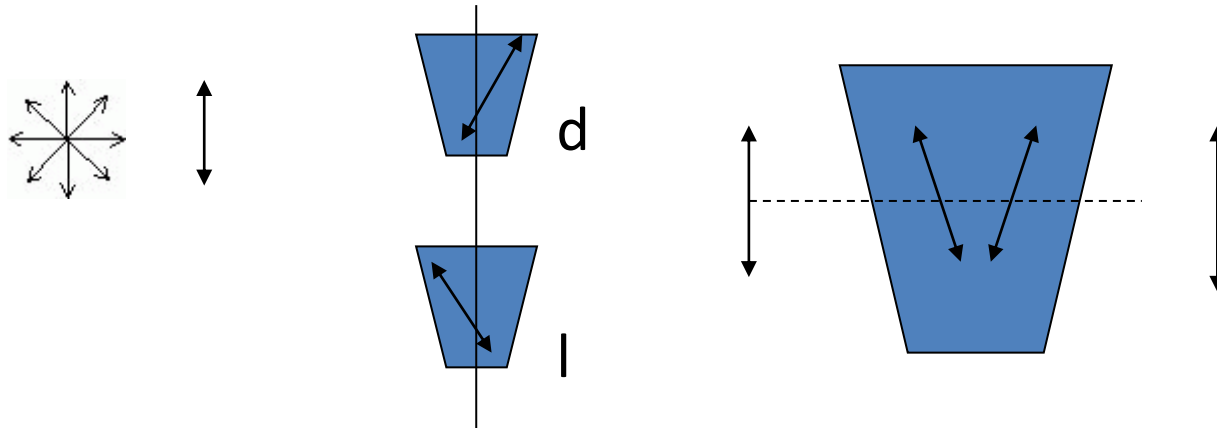


Ác. (-) l-Láctico

Isomeria Óptica

Mistura Racêmica (dl)

É a mistura equimolar (mesma proporção) de dextrogiro e levogiro)



Enantiomorfos

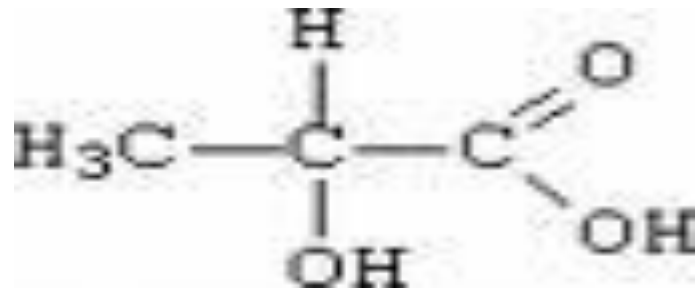
(mesmo ângulo sentido oposto)

Opticamente ativos

Mistura Racêmica (dl)

Opticamente inativo

Isomeria Óptica



Resumindo

Todo a substância com um átomo de carbono assimétrico possui:

Um dextrogiro (d)

Um levogiro (l)

Uma mistura racêmica (dl)

Isômeros
ativos

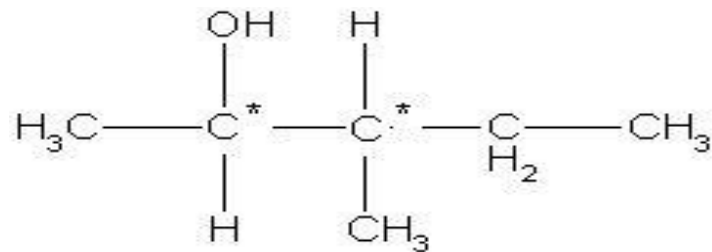
mistura inativa

Isomeria Óptica

2º caso (Mais de um carbono assimétrico diferente)

Lei de le bell e van't hoff

$2^n = n^\circ$ de isômeros ativos



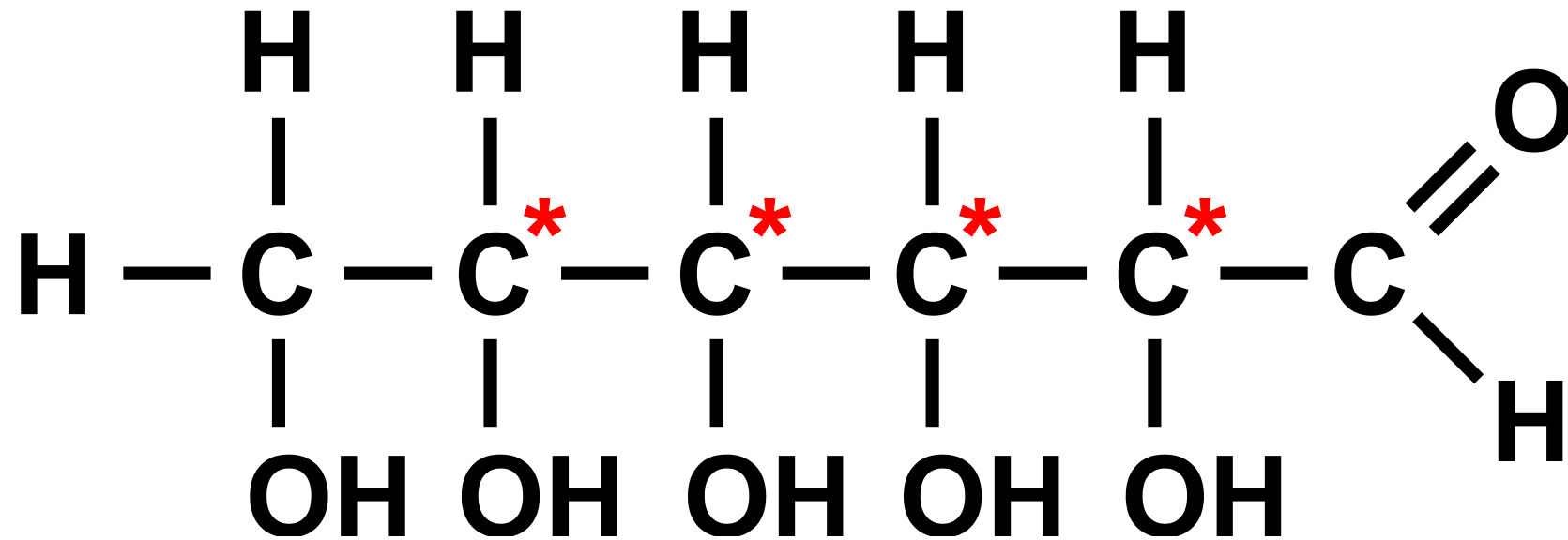
$2^n = 2^2 = 4$ isômeros ativos

2 dextrogiros

2 levogiros

Obs: a metade de isômeros ativos corresponde ao número de misturas racêmicas (2 dl)

Isomeria Óptica



$2^n =$ isômeros ativos

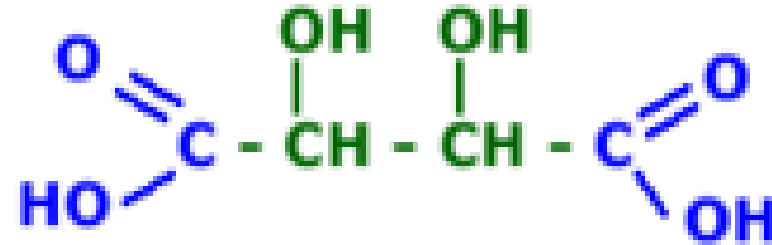
$2^n = 2^4 = 16$ ativos

$\left\{ \begin{array}{l} 8 \text{ d} \\ 8 \text{ l} \end{array} \right.$

8 misturas racêmicas (inativas)

Isomeria Óptica

3º Caso: dois átomos de carbonos assimétricos iguais



Não podemos utilizar a fórmula de le bell

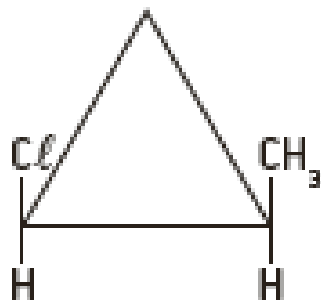
Neste caso (particular) sempre e somente teremos:

um **d** ,um **l** ,uma **mistura racêmica** e um isômero chamado **meso**

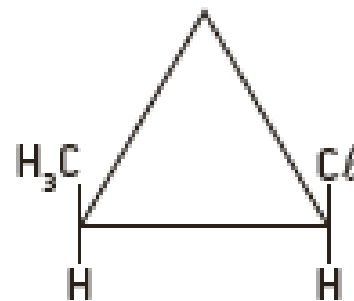
(que só aparece quanto houver dois átomos de carbonos assimétricos iguais) .

Isomeria Óptica II

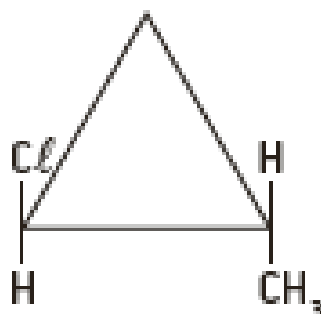
4º Caso: cadeias cíclicas



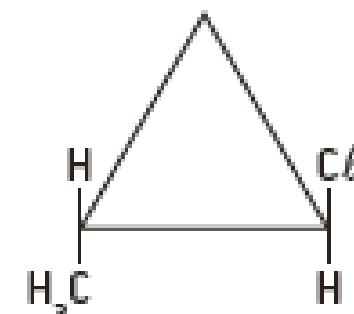
Cis-dextrogiro



Cis-levogiro



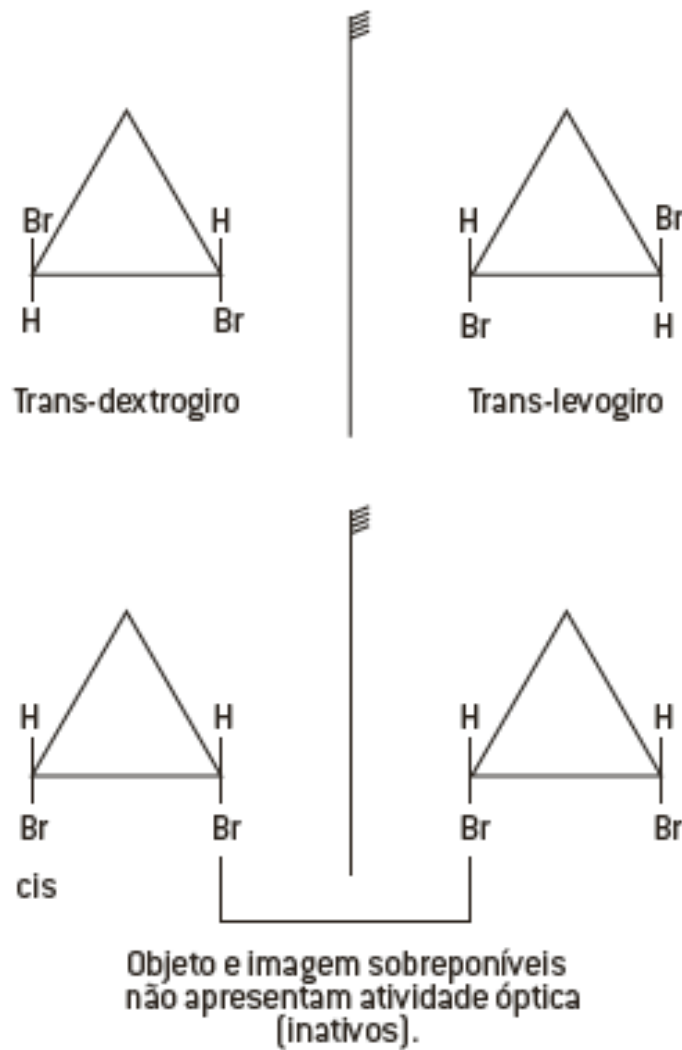
Trans-dextrogiro



Trans-levogiro

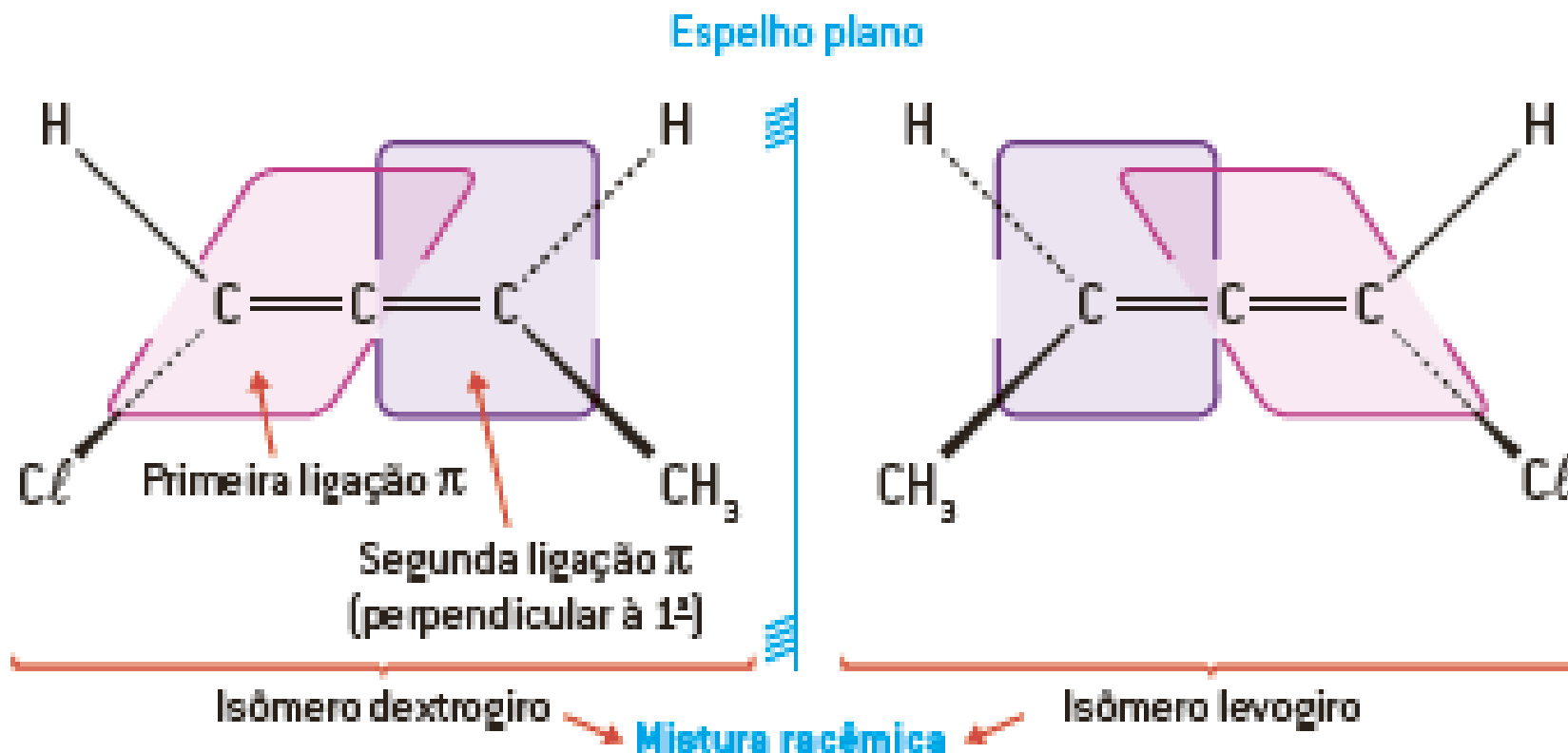
Isomeria Óptica II

4º Caso: cadeias cíclicas



Isomeria Óptica II

5º Caso: derivado do aleno



Módulo 14

264, 266, 268,

269, 280.

Agenda 2020