

ALKÁNOK

Homológ sor C_nH_{2n+2}

Alapnevek	metán	CH_4
	etán	CH_3CH_3
	propán	$CH_3CH_2CH_3$
	bután	$CH_3(CH_2)_2CH_3$
	pentán	$CH_3(CH_2)_3CH_3$
	hexán	$CH_3(CH_2)_4CH_3$
	heptán	$CH_3(CH_2)_5CH_3$
	oktán	$CH_3(CH_2)_6CH_3$
	nonán	$CH_3(CH_2)_7CH_3$
	dekán	$CH_3(CH_2)_8CH_3$

Csoportnevek

alkán \longrightarrow alkil

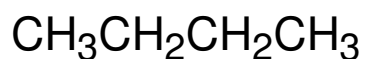
CH_4 \longrightarrow CH_3-
metán metil

CH_3CH_3 \longrightarrow CH_3CH_2-
etán etil

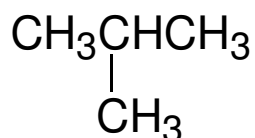
Elágazó szénláncú alkánok

Konstitúciós izomerek

C_4H_{10}

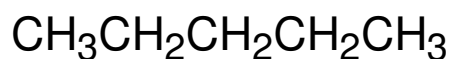


bután

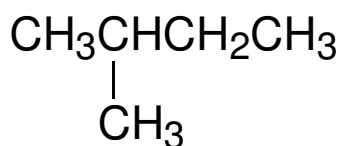


2-metilpropán
(izobután)

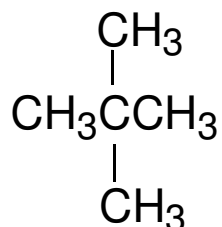
C_5H_{12}



pentán

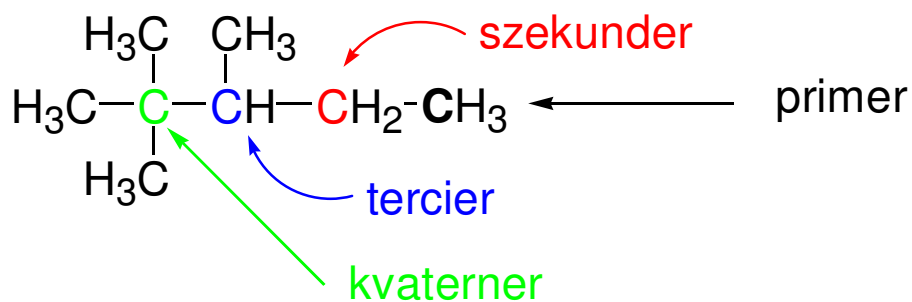


2-metilbután
(izopentán)

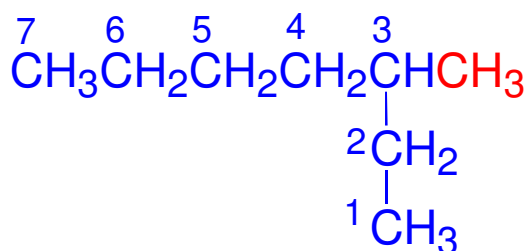


2,2-dimetilpropán
(neopentán)

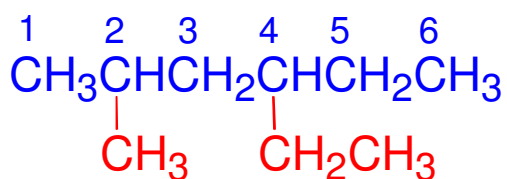
A szénatomok rendűsége



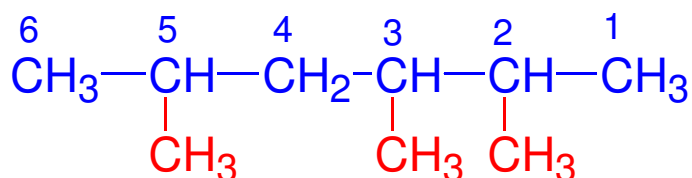
ELNEVEZÉS



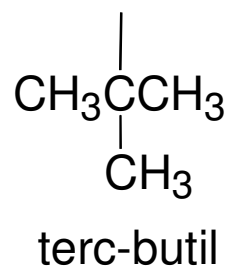
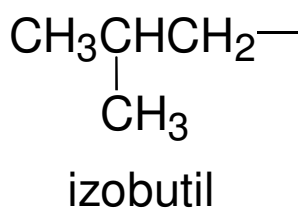
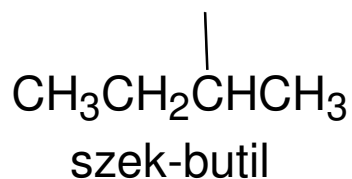
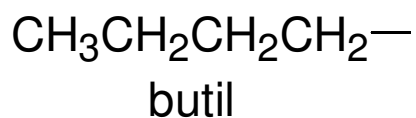
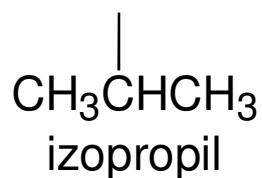
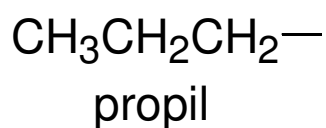
3-metilheptán



4-etil-2-metilhexán

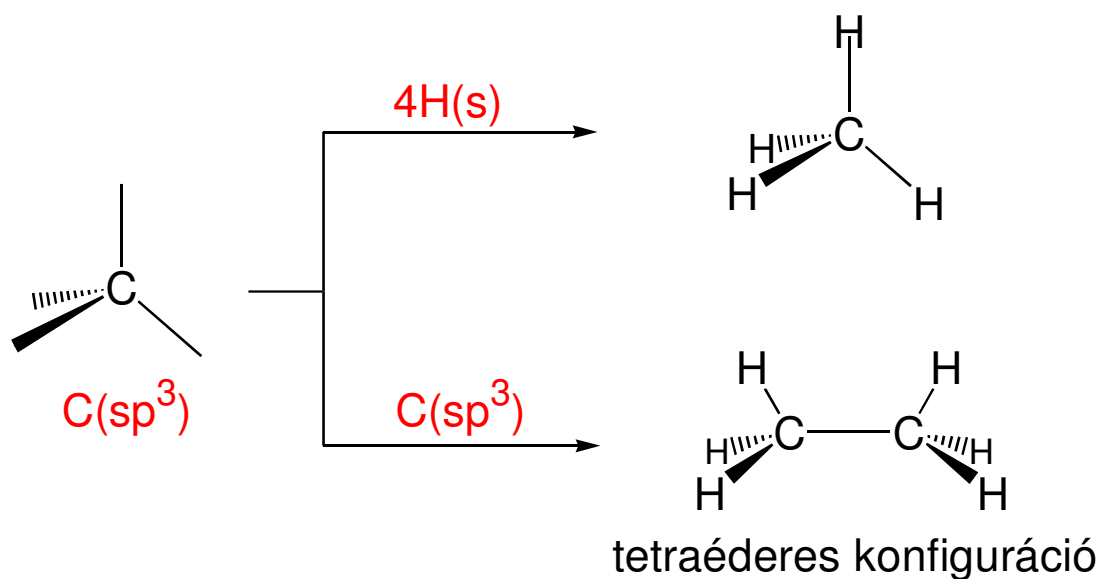
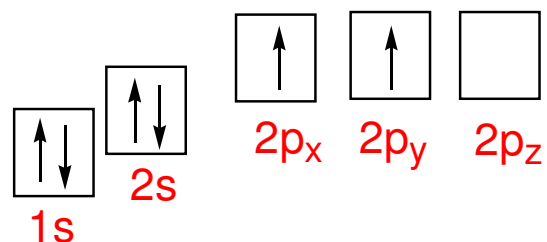


2,3,5-trimetilhexán

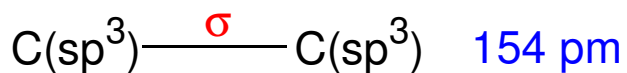
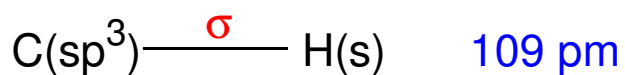


KÖTÉSRENDSZER

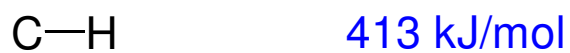
A szénatom elektronszerkezete



Kötéstípusok

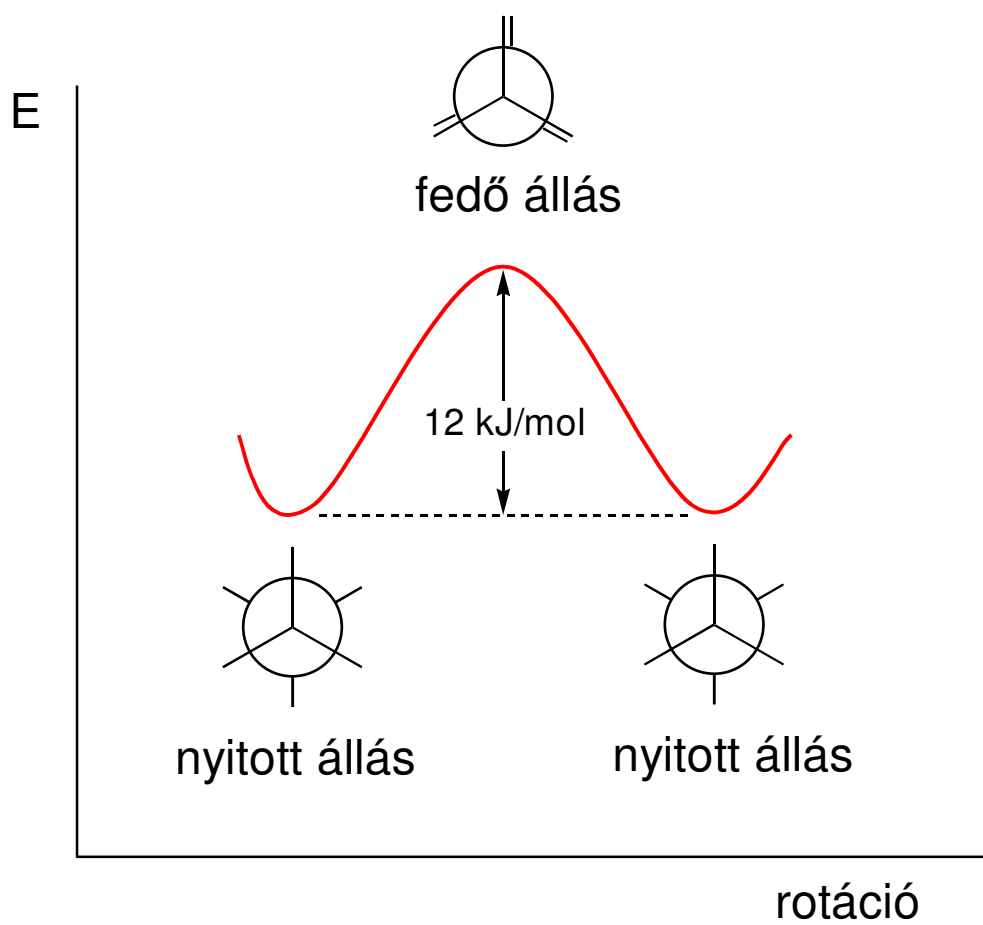
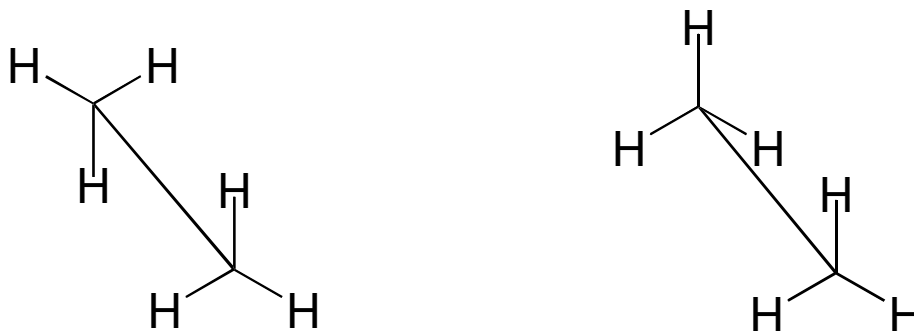


Kötési energia

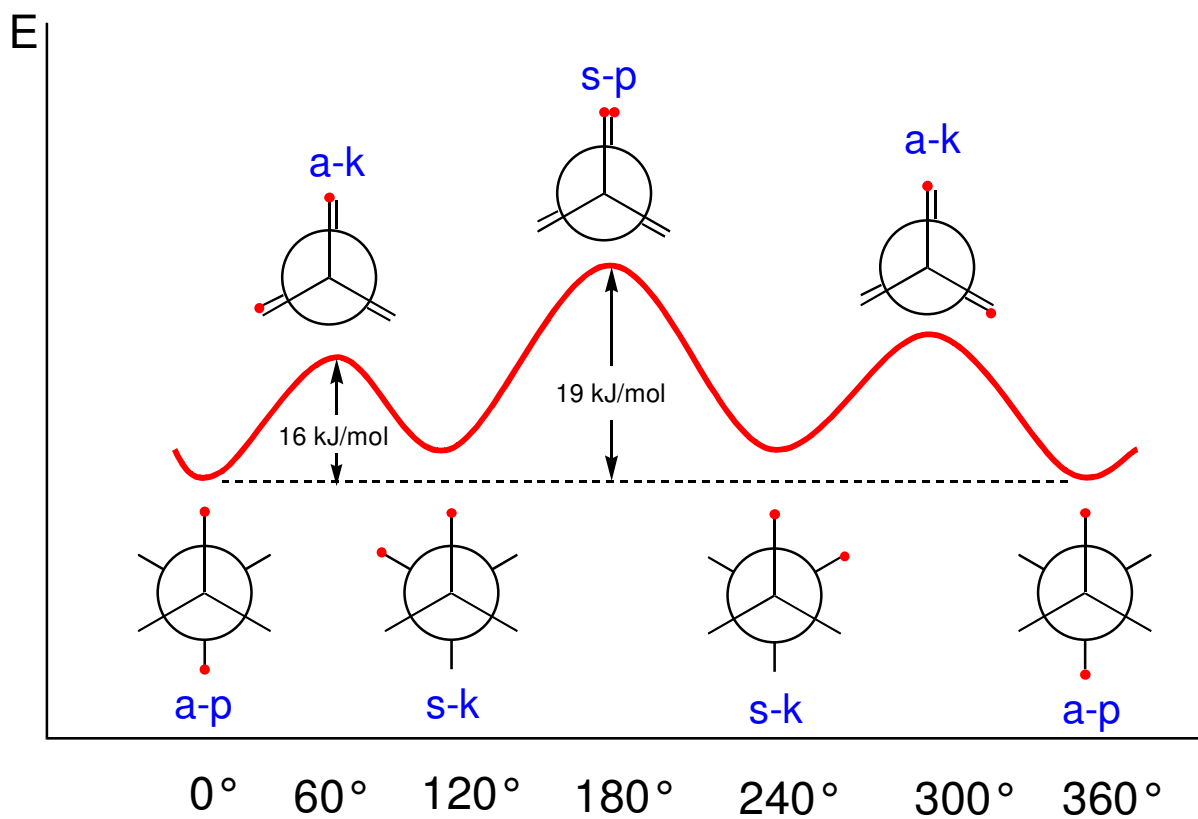


AZ ALKÁNOK KONFORMÁCIÓJA

Etán



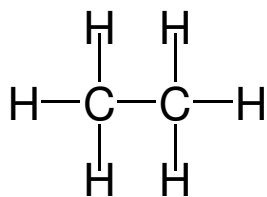
Bután



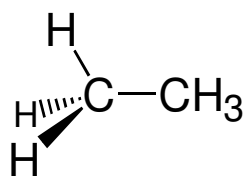
s szin
 a anti
 p periplanáris
 k klinális

$$\frac{[a-p]}{[s-k]} = 2$$

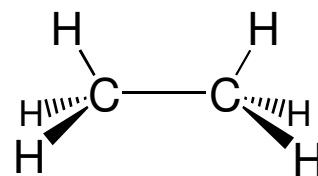
Térszerkezet



konstitúció



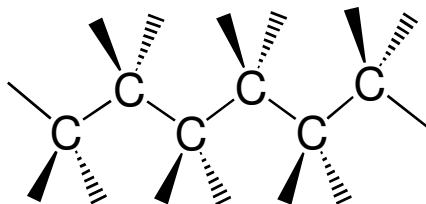
konfiguráció



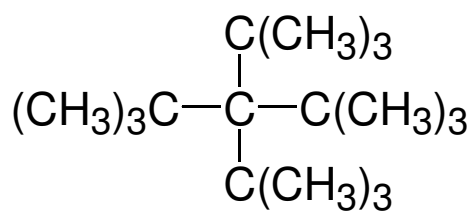
konformáció

Nagyobb szénatomszámú alkánok konformációja

Szilárd halmazállapotban

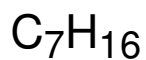


Térbeli gátlás

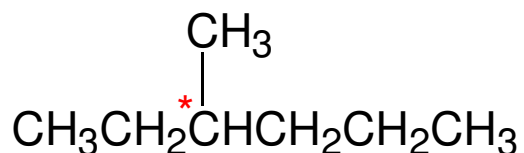


nem létezik

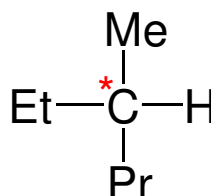
AZ ALKÁNOK SZTEREOIZOMÉRIÁJA



9 konstitúciós izomer

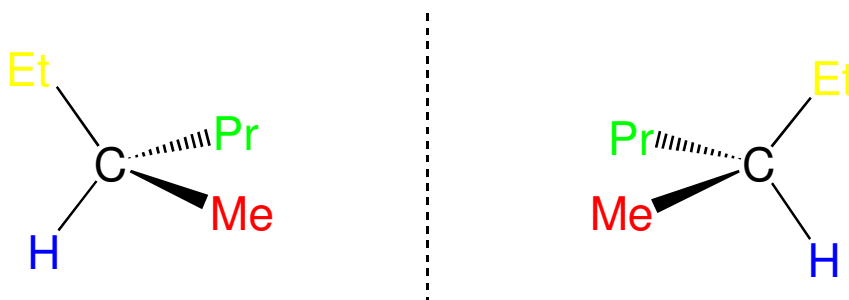


3-metilhexán

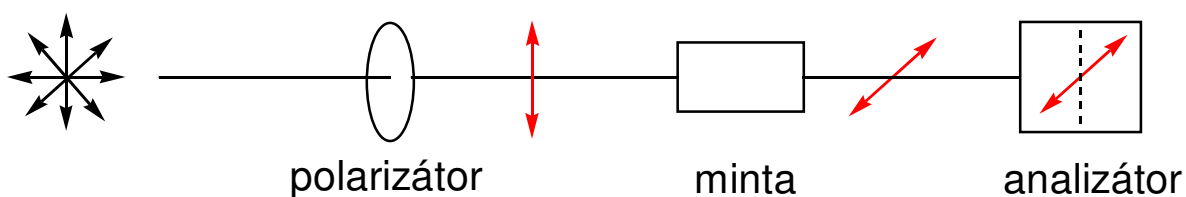


kiralitás centrum, aszimmetria centrum

Optikai izoméria (királis térszerkezet)



enantiomerek, optikai izomerek



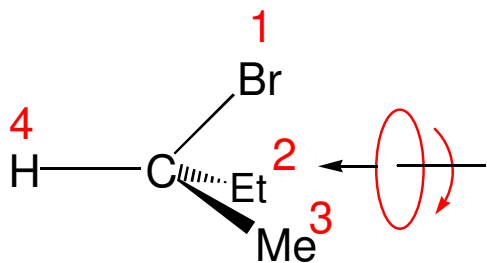
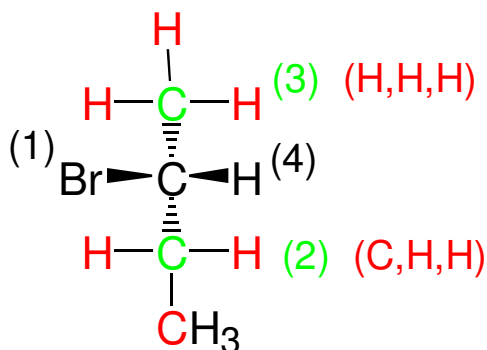
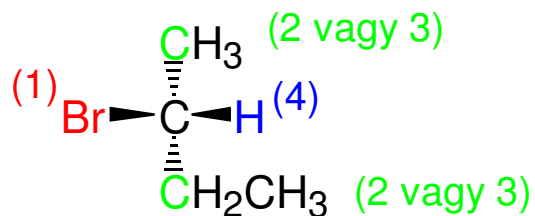
elforgatás iránya: (+), (-)

elforgatás mértéke: α

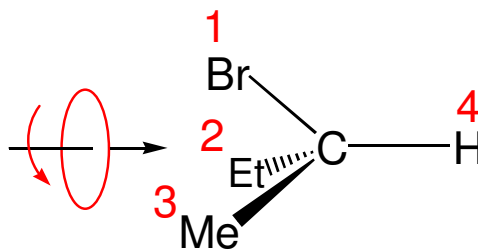
Az enantiomerek elnevezése

Cahn, Ingold, Prelog (CIP szabály)

2-brómbután



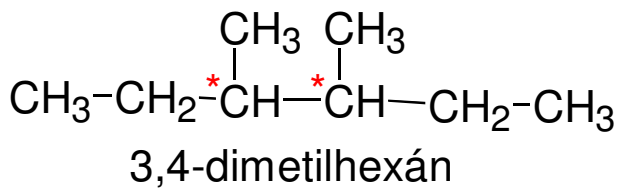
(R)-2-brómbután



(S)-2-brómbután

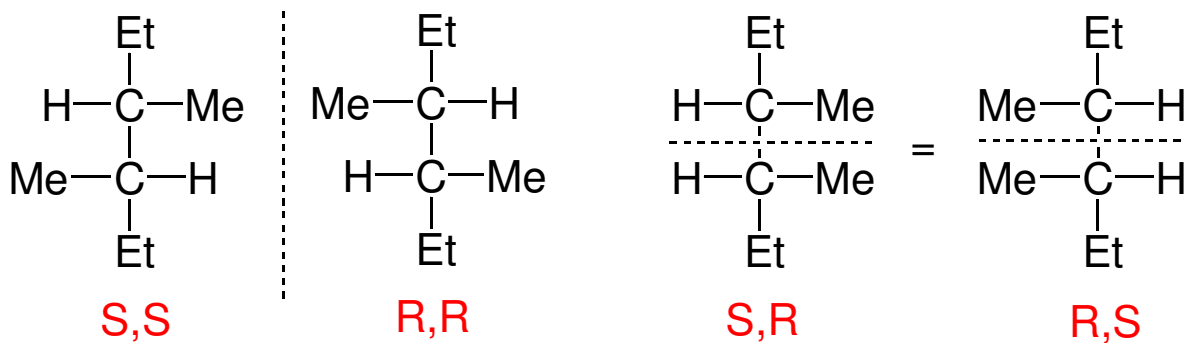
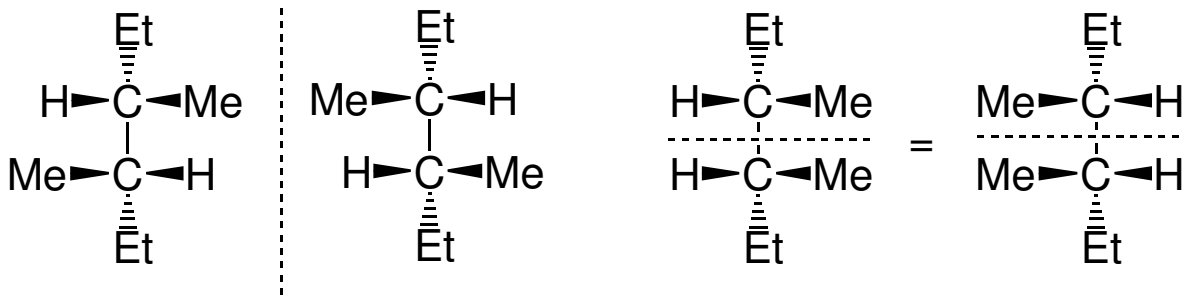
R:S = 1:1 racém elegy (racemát)

Több kiralitáscentrumot tartalmazó molekulák



C(H, Me, Et, ^sBu)

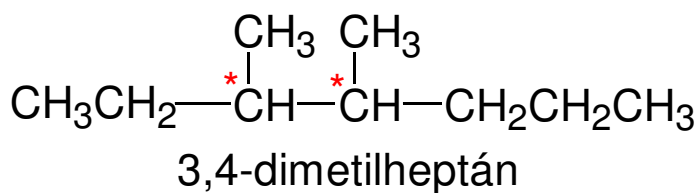
C(H, Me, Et, ^sBu)



enantiomerek

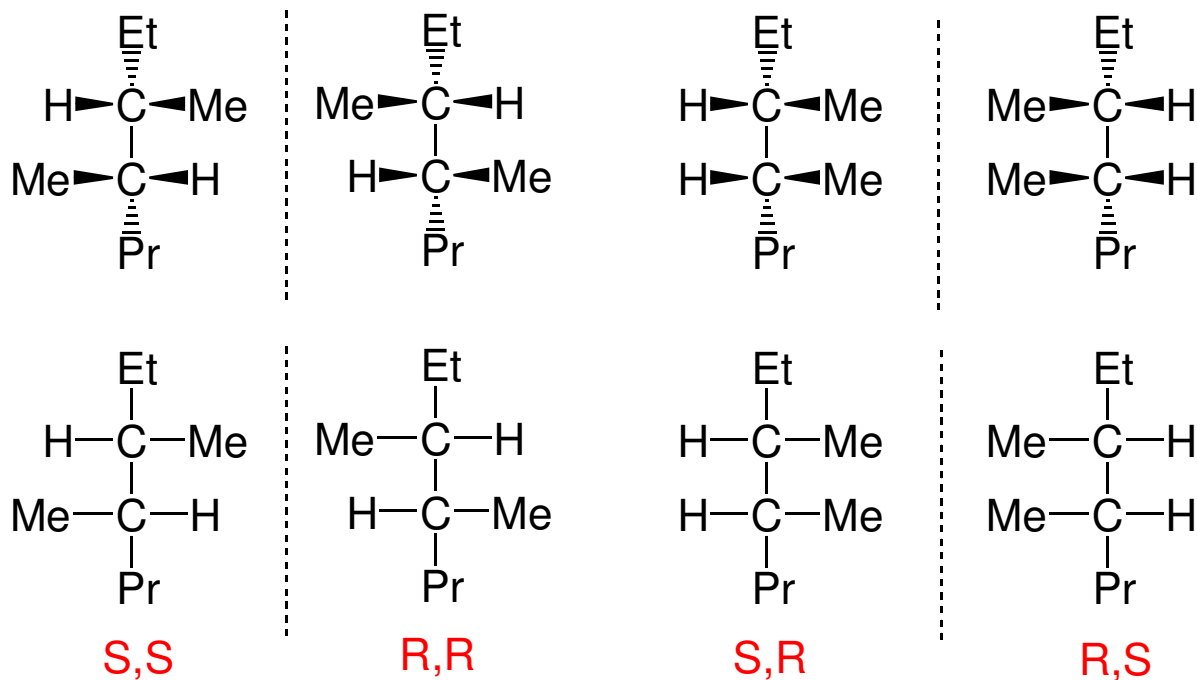
optikailag inaktív; mezo alak

3 sztereoizomer



C(H, Me, Et, ^sPe)

C(H, Me, Pr, ^sBu)



enantiomerek

enantiomerek

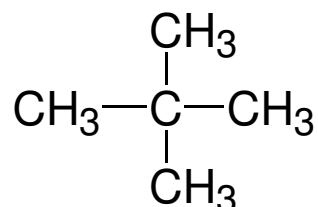
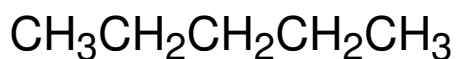
diasztereomerek (eltérő tulajdonságok)

4 sztereoizomer

Enantiomerek szétválasztása: rezolválás

AZ ALKÁNOK FIZIKAI TULAJDONSÁGAI

	Op. (°)	Fp. (°)
CH ₄	-183	-162
CH ₃ CH ₃	-172	-88
CH ₃ CH ₂ CH ₃	-187	-42
CH ₃ (CH ₂) ₂ CH ₃	-138	0
CH ₃ (CH ₂) ₃ CH ₃	-130	36
CH ₃ (CH ₂) ₈ CH ₃	-30	174
CH ₃ (CH ₂) ₁₄ CH ₃	18	280



Op. (°C)	-130	-17
Fp. (°C)	36	10
Fp. - Op. (°C)	166	27

Oldhatóság

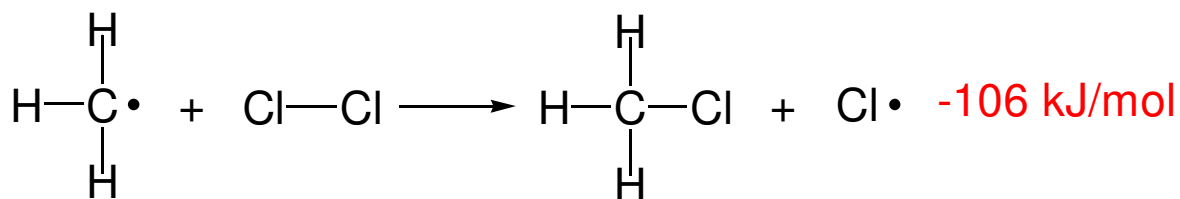
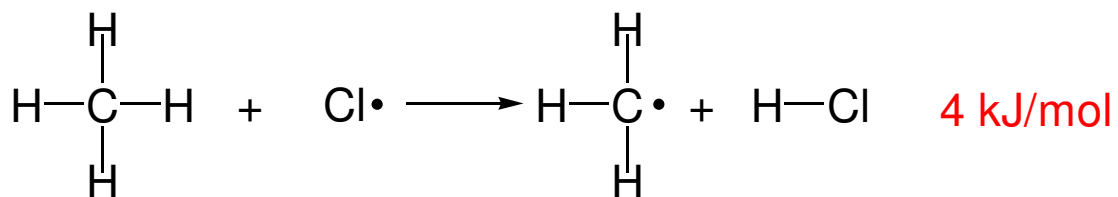
Dipólusmomentum

Mechanizmus

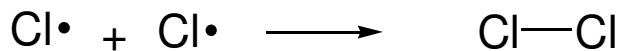
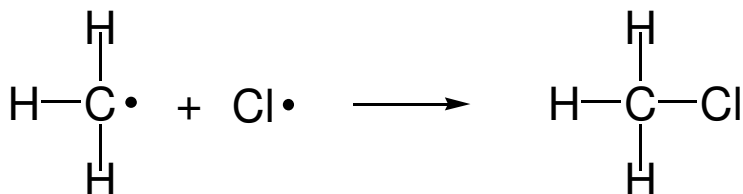
kezdőlépés



láncreakció



zárólépések

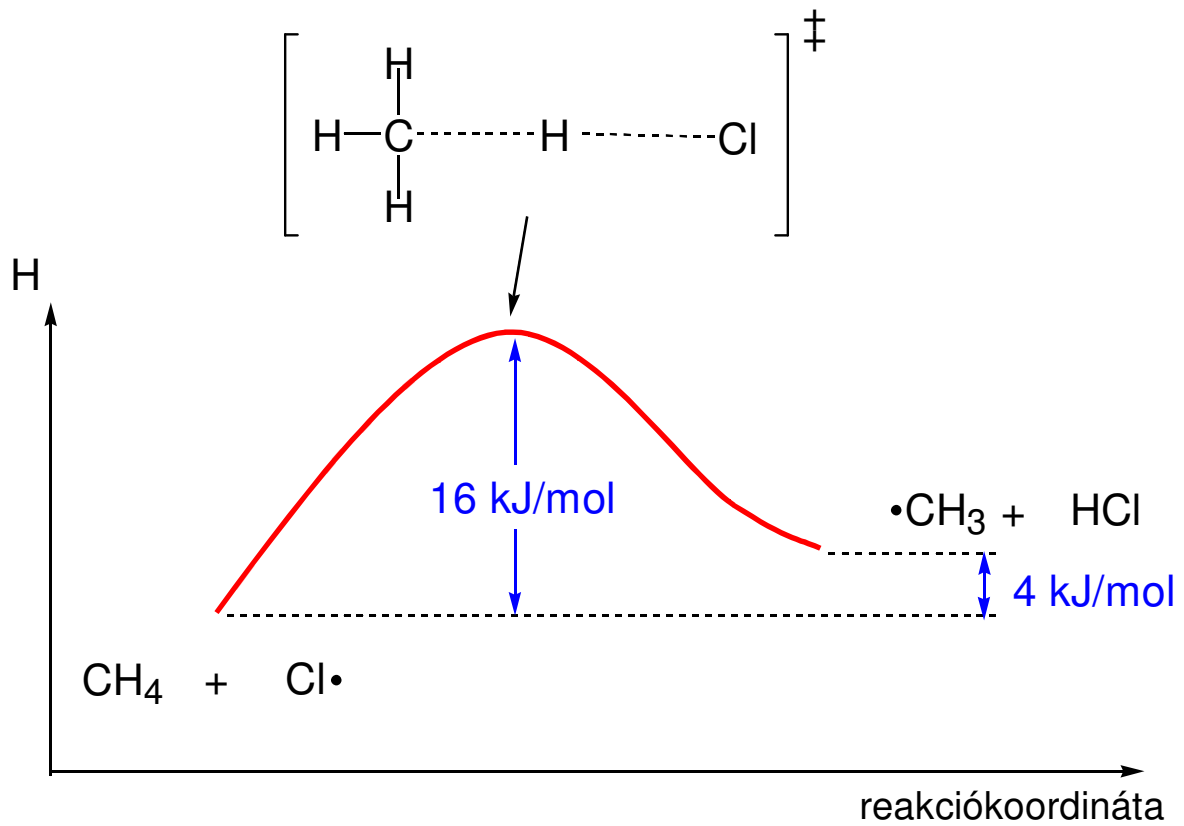
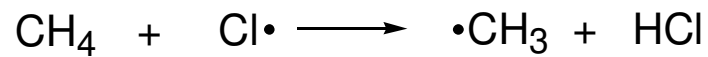


láncmechanizmus

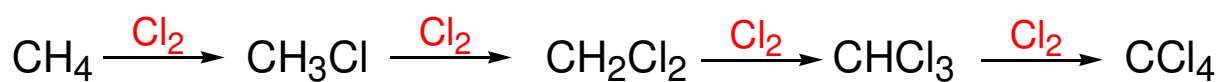
láncvivő: $\text{Cl}\cdot$

gyökös szubsztitúció (S_R)

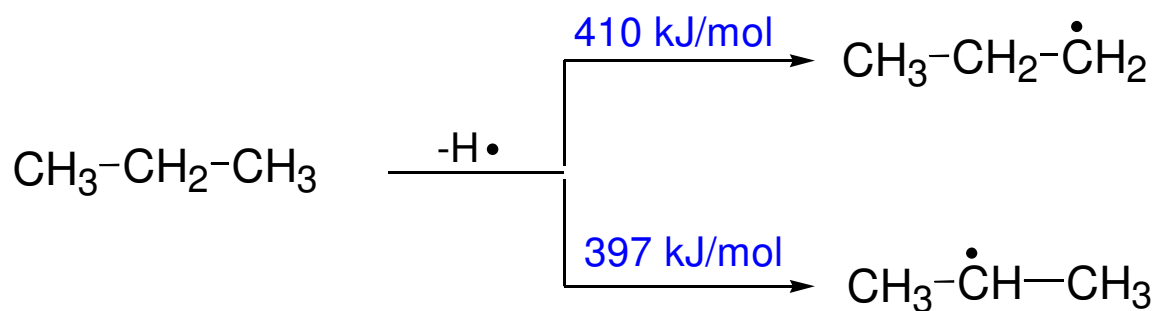
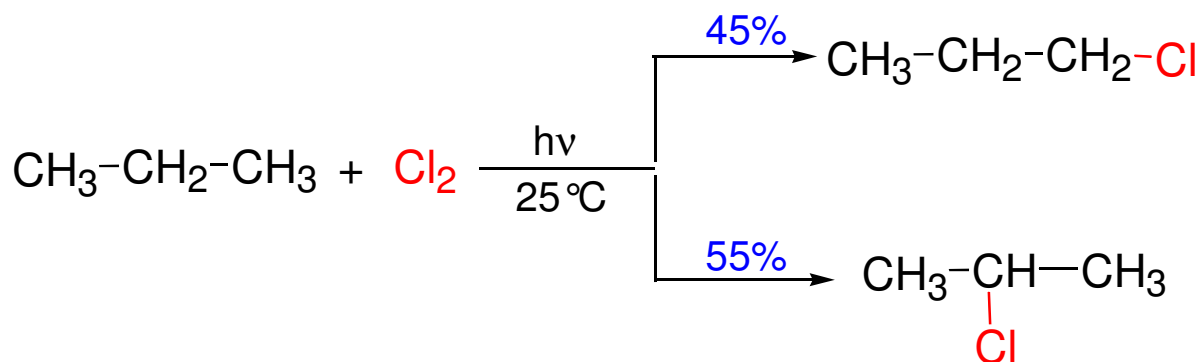
Elemi lépés



Keveréktermék képződés



Az alkánok klórozása



Szabad gyökök relatív stabilitása

