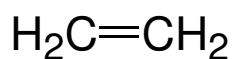
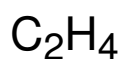


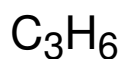
ALKÉNEK

Homológ sor C_nH_{2n}

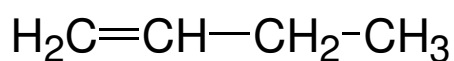
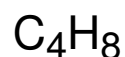
Elnevezés



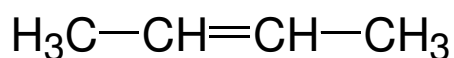
etén



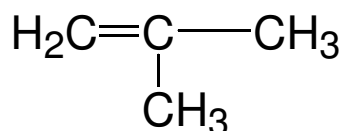
propén



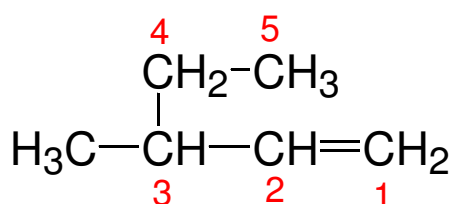
but-1-én



but-2-én

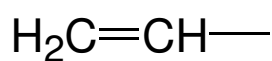


metilpropén

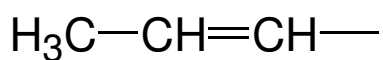


3-metilpent-1-én

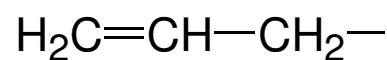
Csoportnevek



vinil

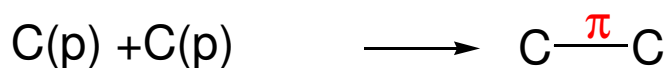
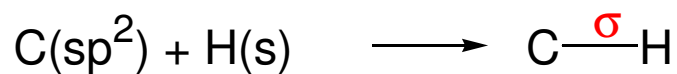
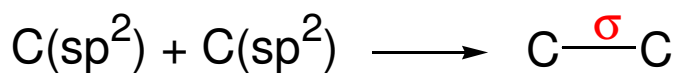
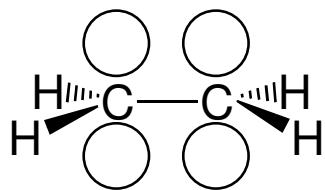


propenil

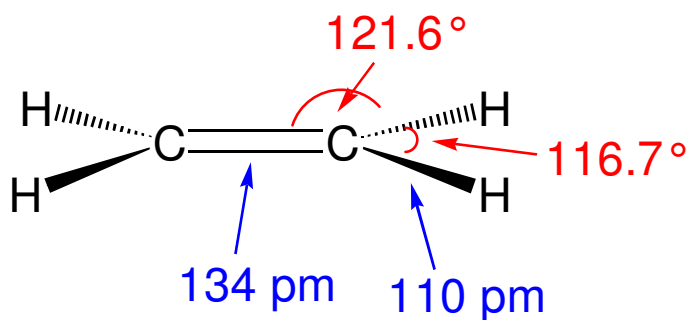


allil

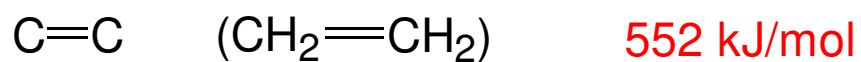
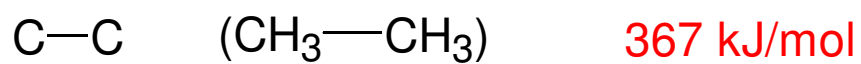
Kötéstípusok



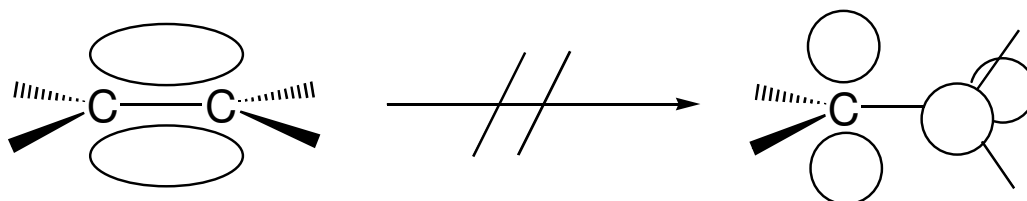
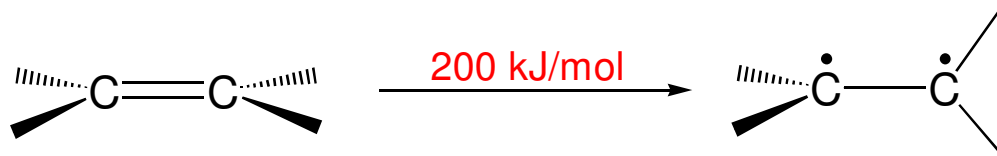
Térszerkezet



Kötési energia

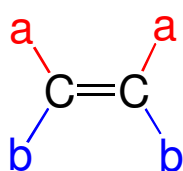


AZ ALKÉNEK SZTEREOIZOMÉRIÁJA

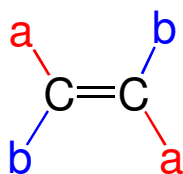


gátolt rotáció \longrightarrow geometriai (cisz-transz) izoméria

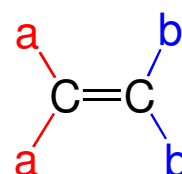
A cisz-transz izomerek elnevezése



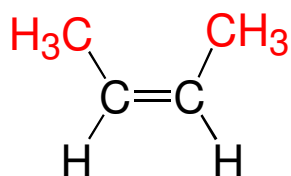
cisz
Z



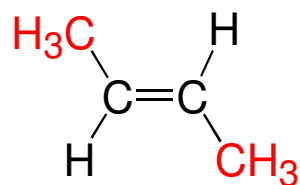
transz
E



nincs cisz-transz
izoméria

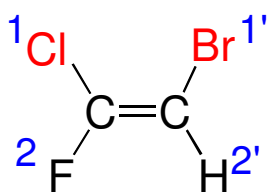
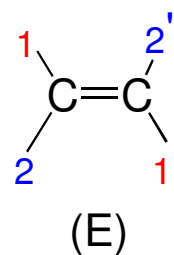
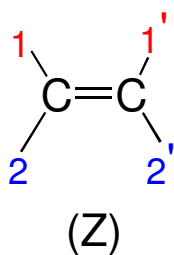


(Z)-but-2-én
cisz-but-2-én

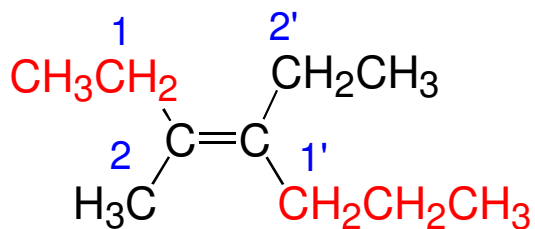


(E)-but-2-én
transz-but-2-én

bonyolultabb esetben CIP-konvenció



(Z)-2-bróm-1-fluor-1-klóretén



(E)-4-etil-3-metilhept-3-én

A cisz-transz izomerek jellemzése

eltérő fizikai tulajdonságok

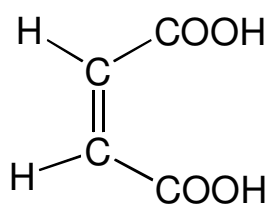
pl. (Z)-but-2-én op. $-139\text{ }^{\circ}\text{C}$

(E)-but-2-én op. $-106\text{ }^{\circ}\text{C}$

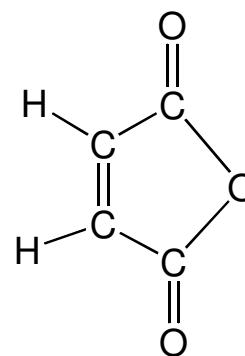
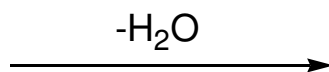
eltérő stabilitás

pl. (Z)-but-2-én } $\Delta H = 4\text{ kJ/mol}$
(E)-but-2-én }

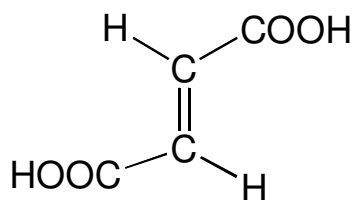
eltérő reaktivitás



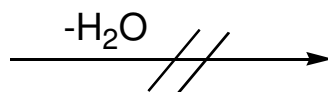
maleinsav



maleinsavanhidrid

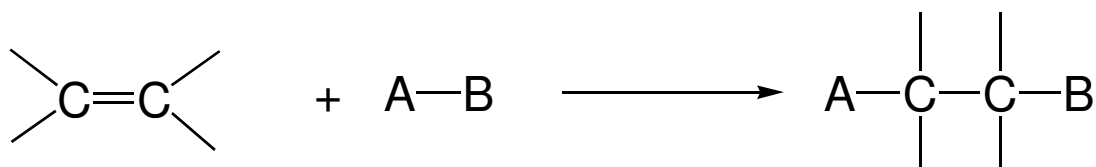


fumársav

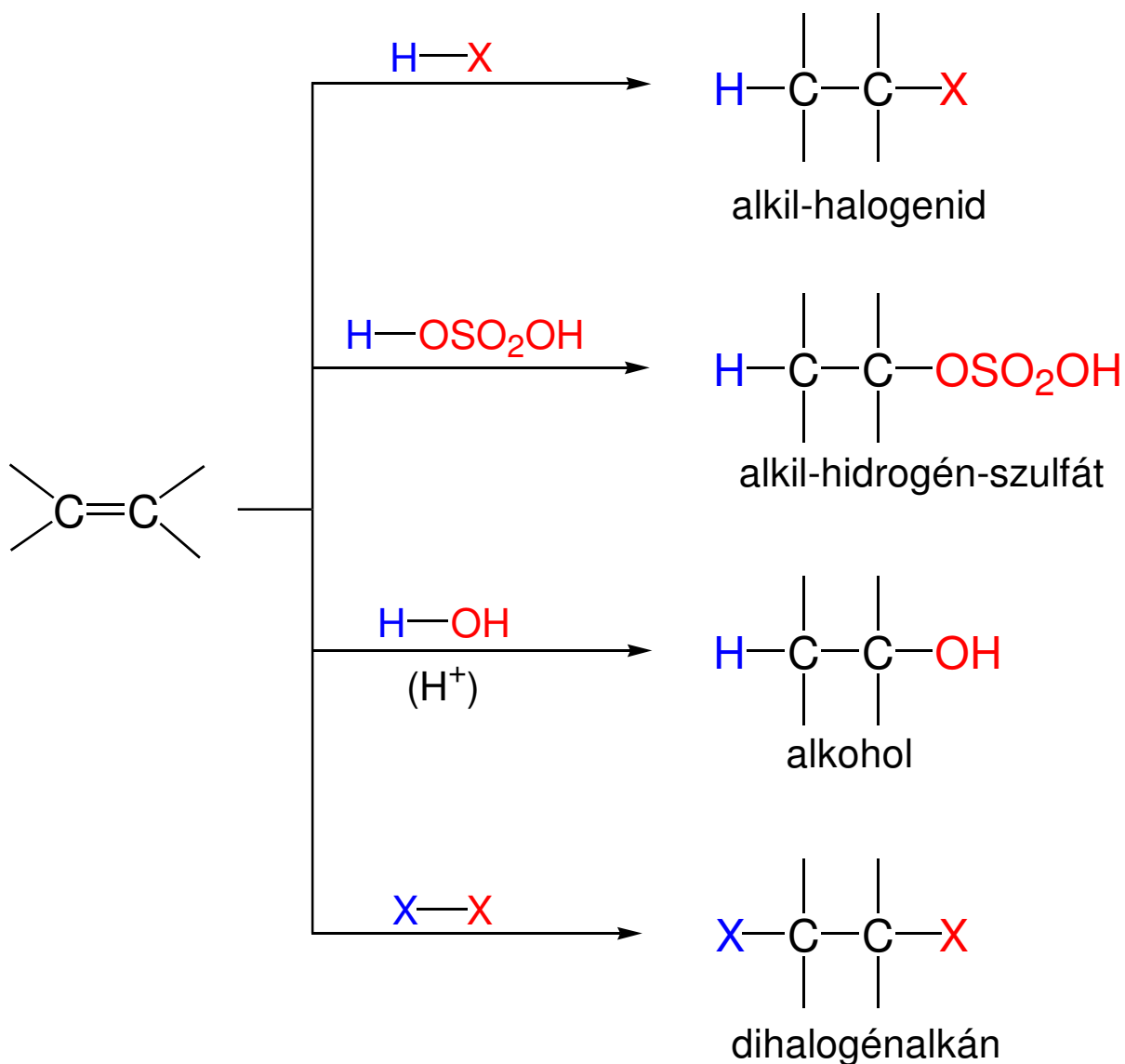


AZ ALKÉNEK KÉMIAI TULAJDONSÁGAI

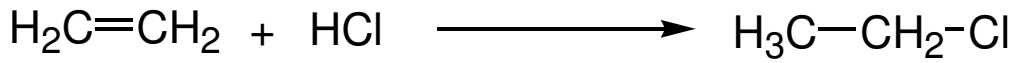
Addíciós reakciók



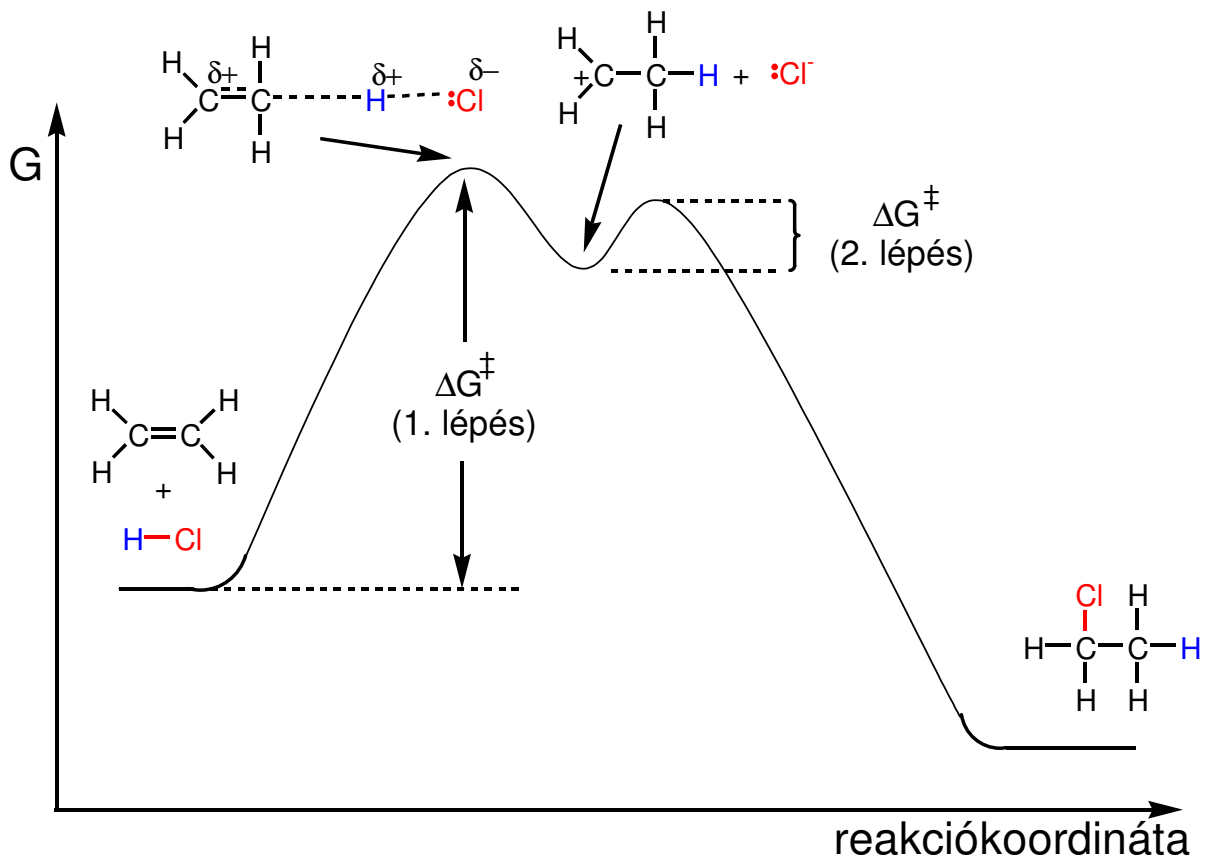
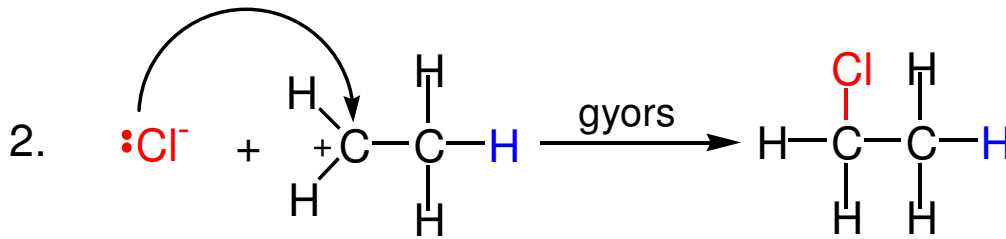
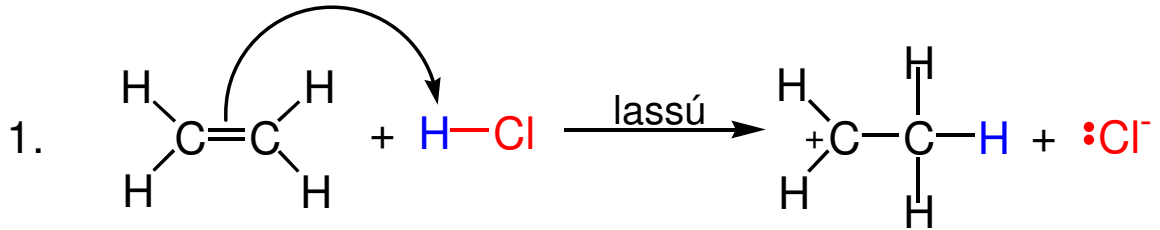
Elektrofil addíciós reakciók

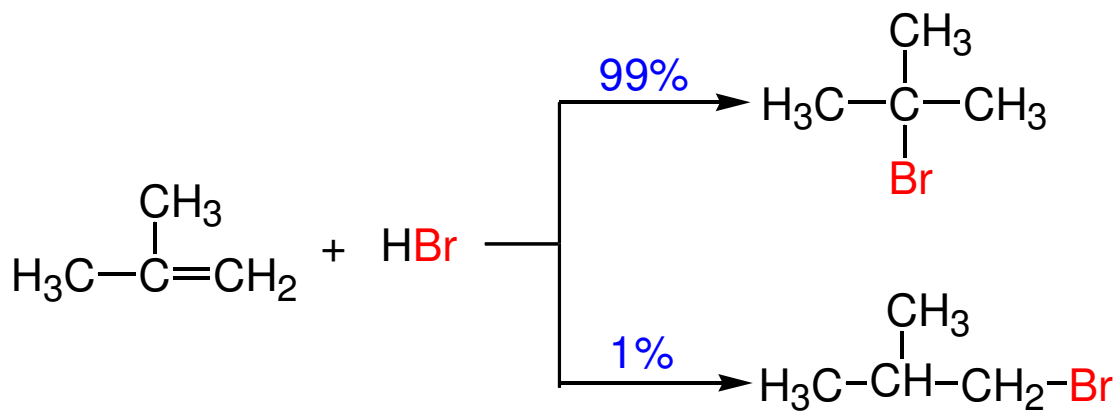


Erős savak addíciója (elektrofil addíció, Ad_E)

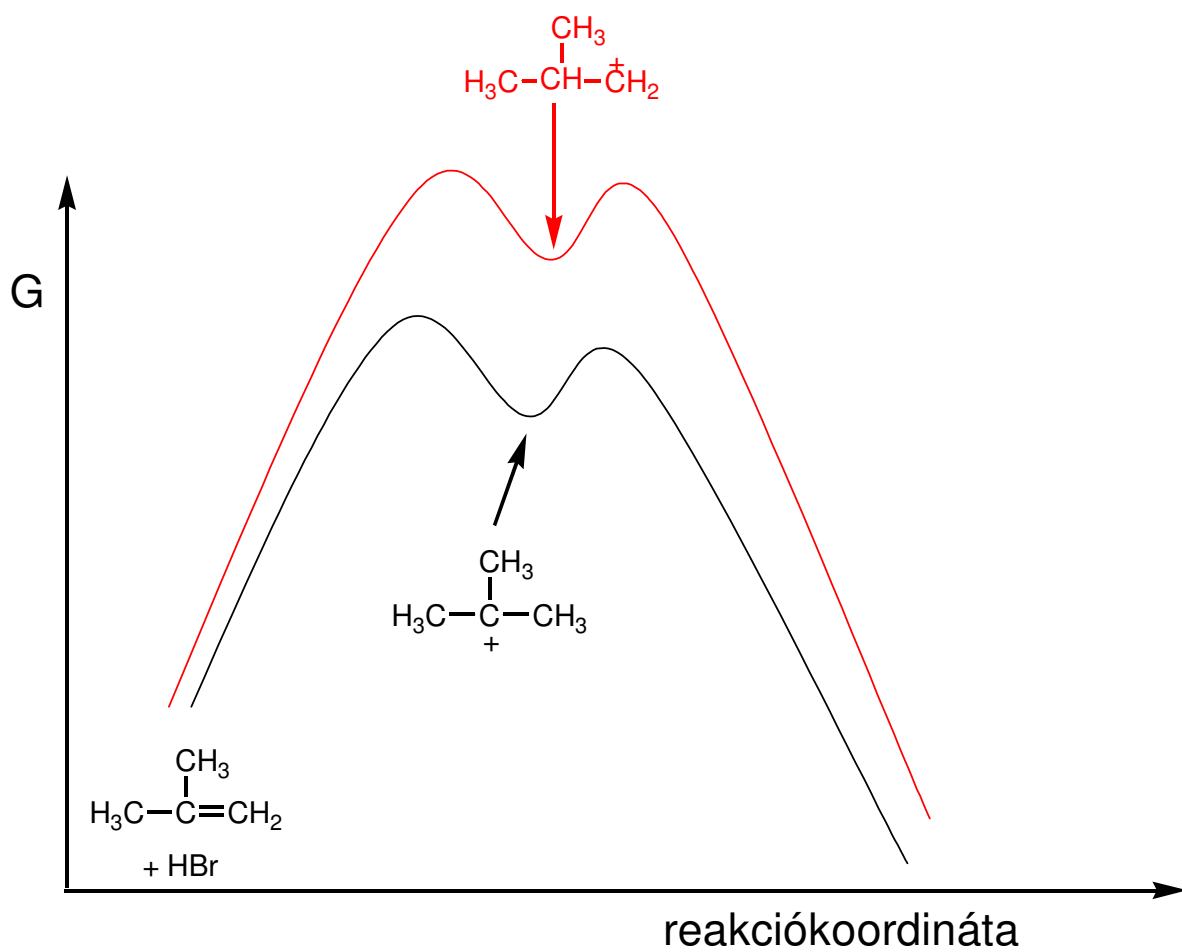


Mechanizmus

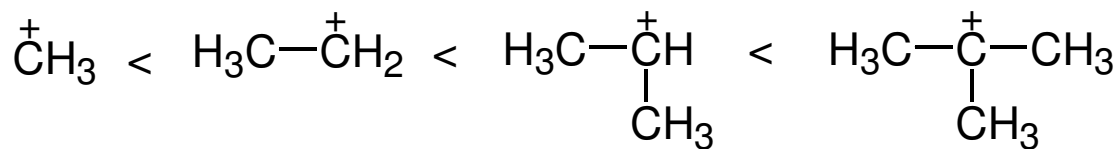




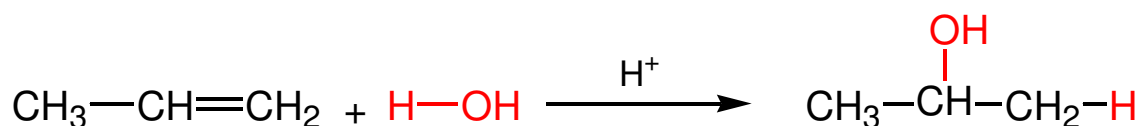
Markovnyikov szabály



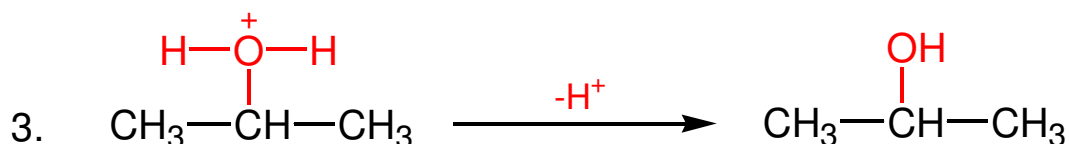
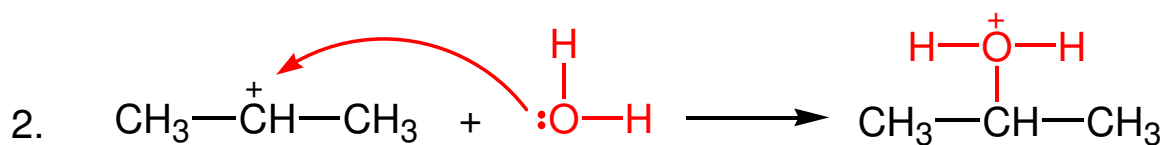
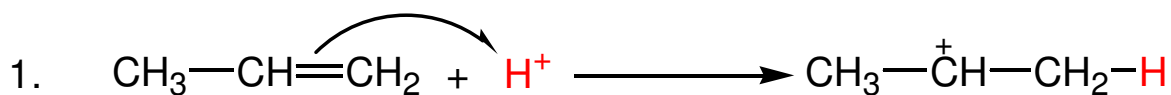
A karbénium ionok relatív stabilitása



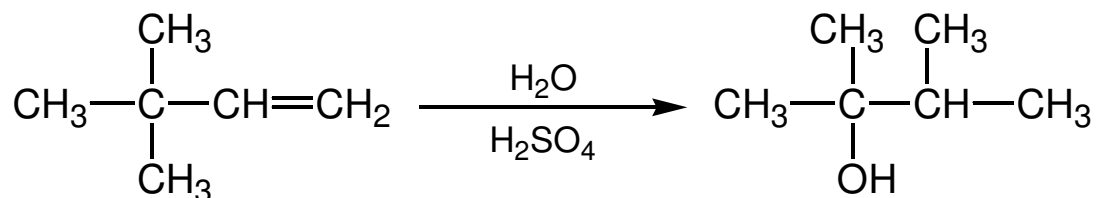
Hidratáció



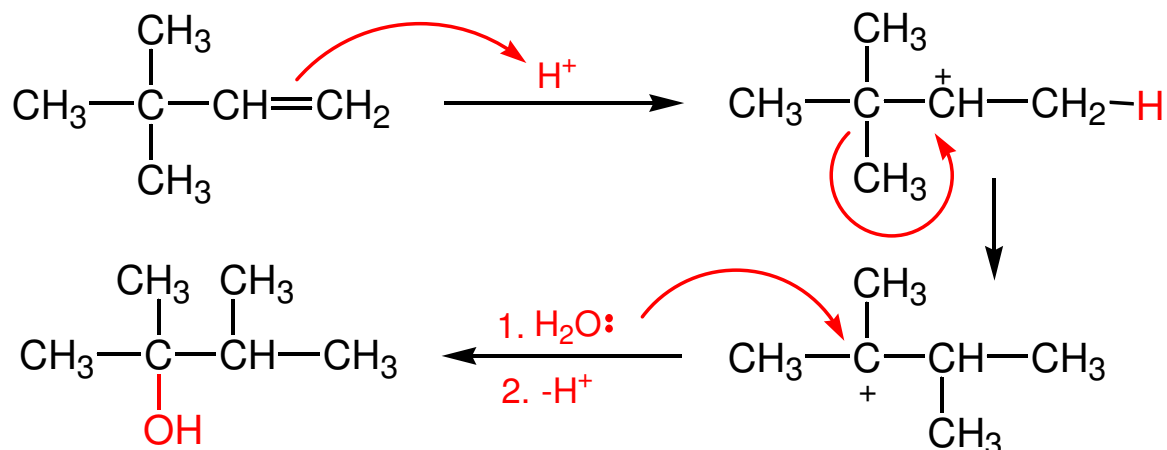
Mechanizmus



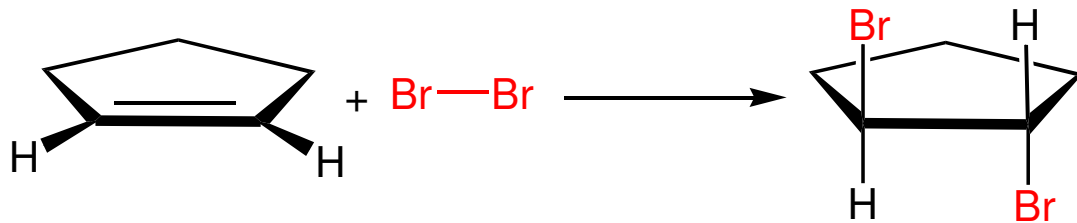
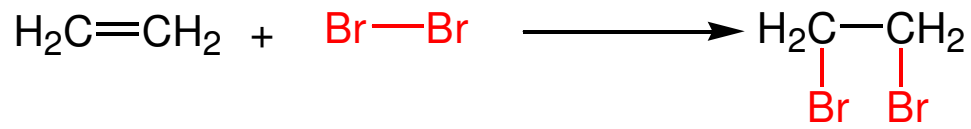
Hidratáció átrendeződéssel



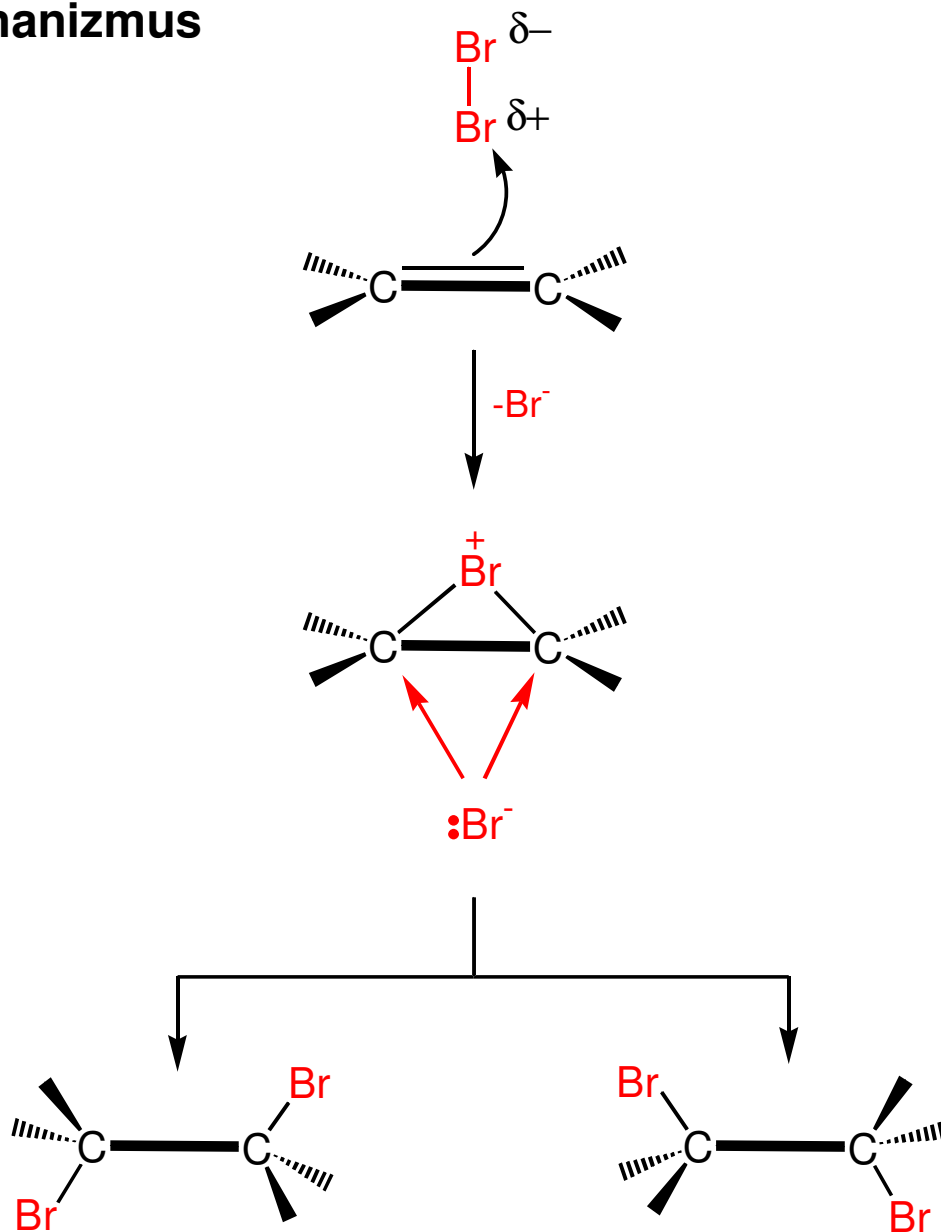
Mechanizmus



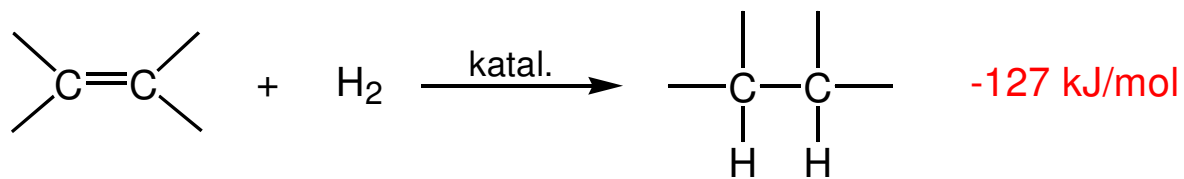
Halogénezés



Mechanizmus

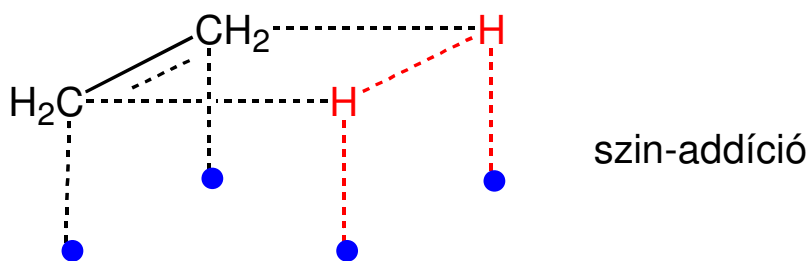


Hidrogénezés

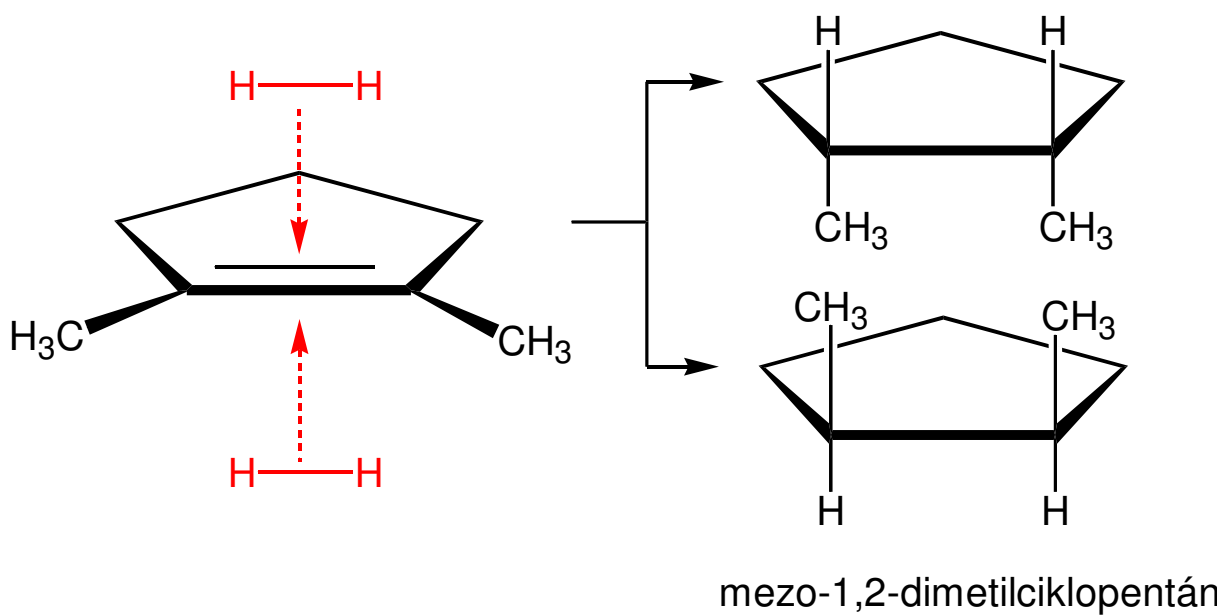


katalizátorok: Pt, Pd, Ni

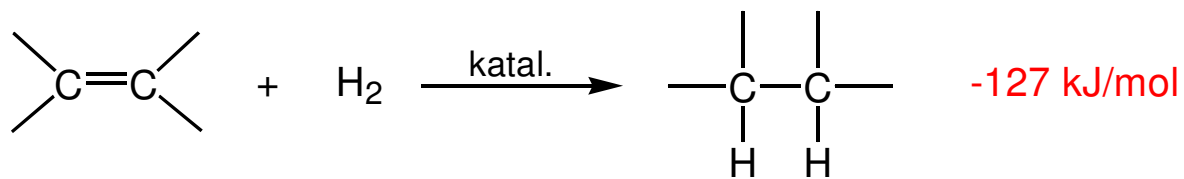
Mechanizmus



Példa

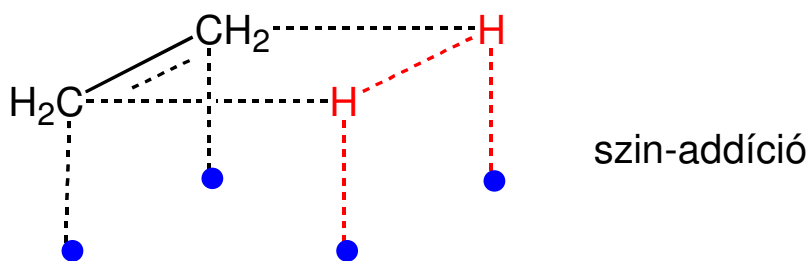


Hidrogénezés

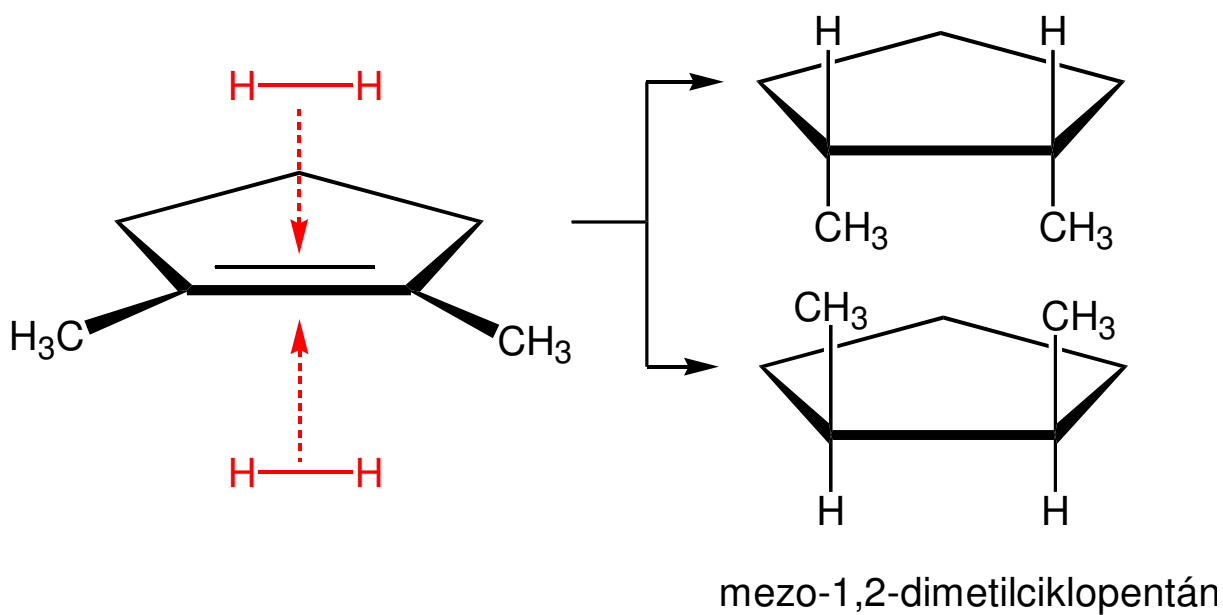


katalizátorok: Pt, Pd, Ni

Mechanizmus



Példa



A hidrogénezés alkalmazása

Analitikai alkalmazás

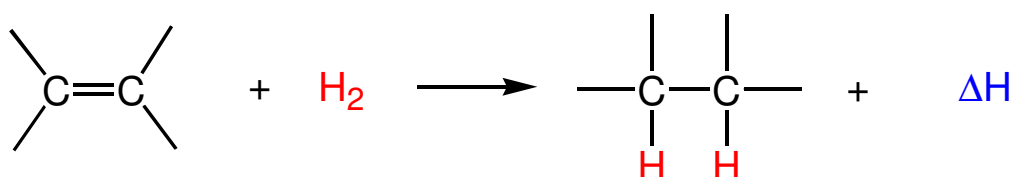
H₂ fogyás mérése → telítetlenség mértéke

Preparatív alkalmazás

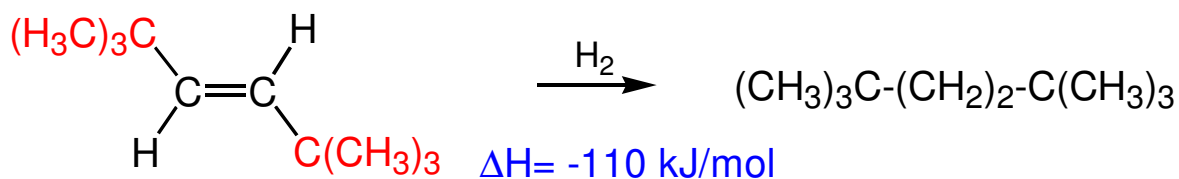
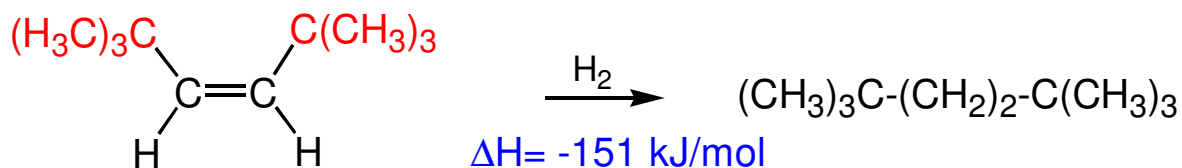
alkén → alkán

Termokémiai alkalmazás

relatív stabilitás

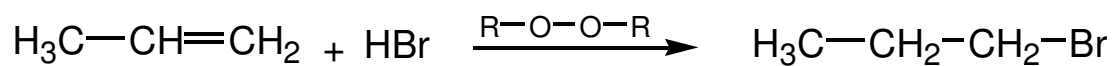


Pl.

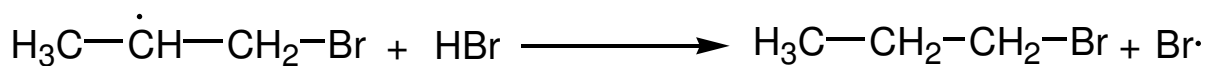
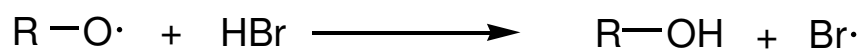


anti-Markovnyikov addíciók

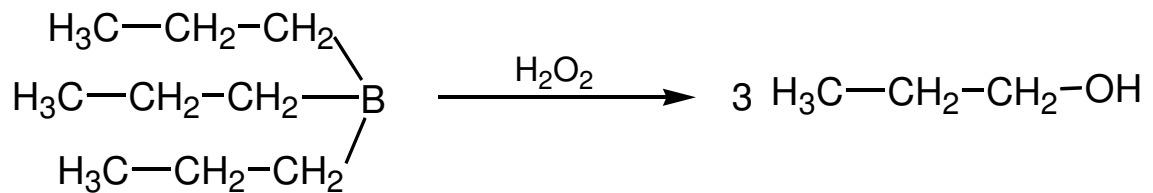
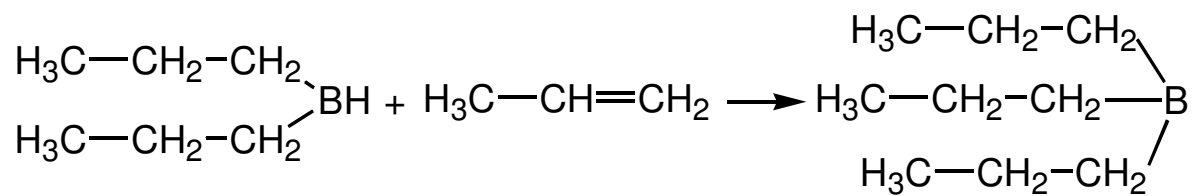
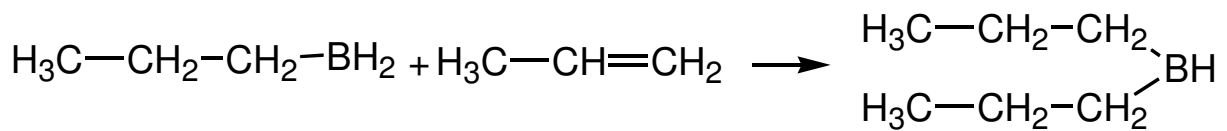
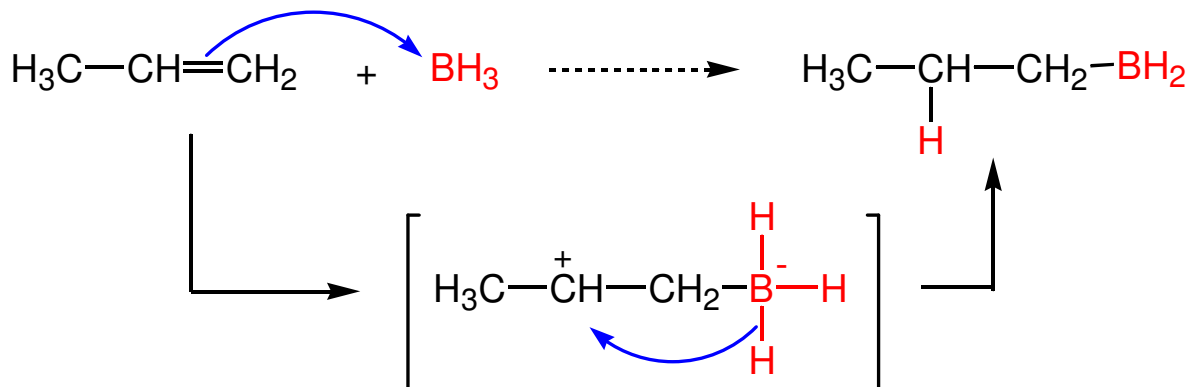
HBr addíció peroxidok jelenlétében



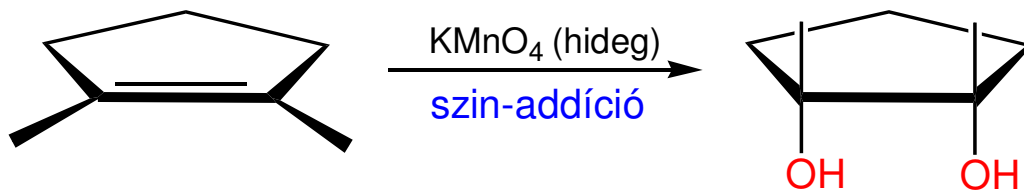
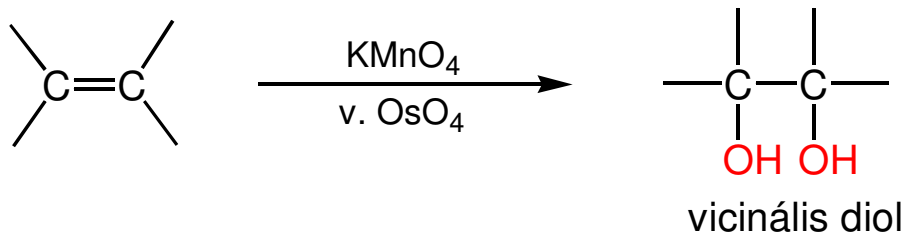
Mechanizmus



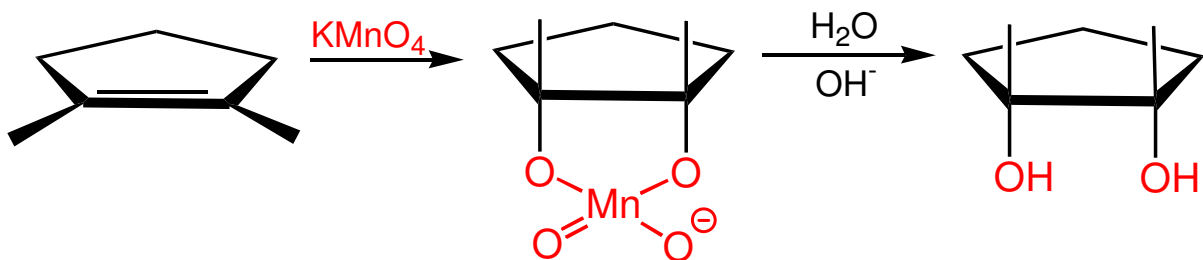
Hidroborálás



Az alkének hidroxilezése

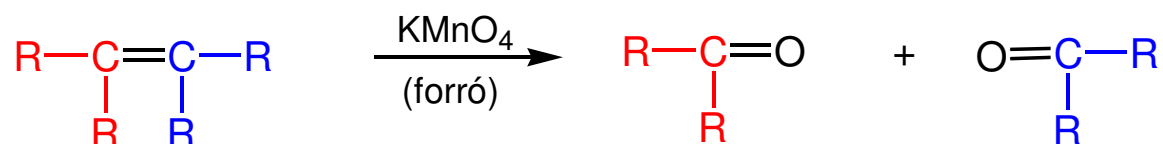
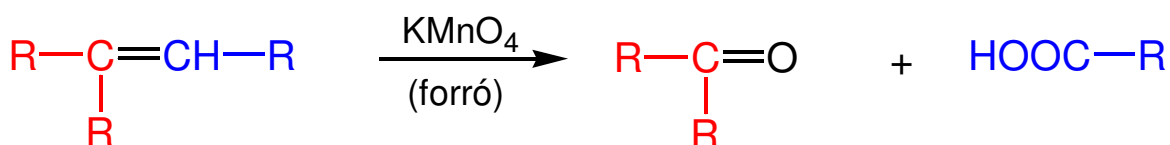


Mechanizmus

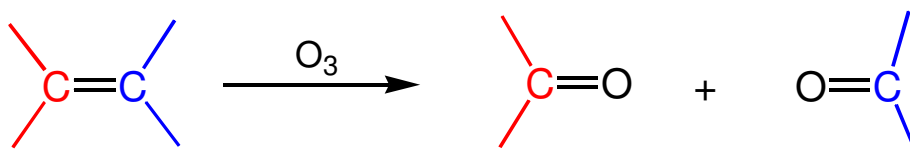


Az alkének lánchasadással járó oxidációja

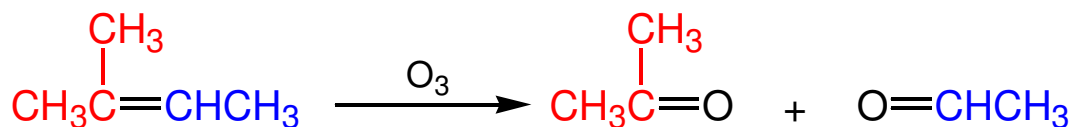
Oxidáció KMnO_4 -tal



Ozonolízis



Pl.

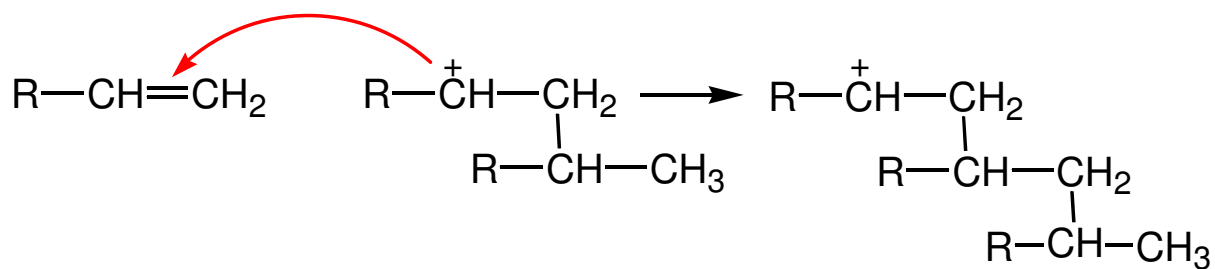
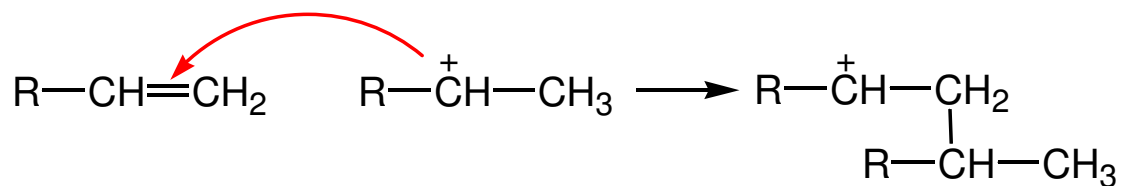


Kationos mechanizmusú polimerizáció

kezdőlépés



láncnövelés



zárólépés

