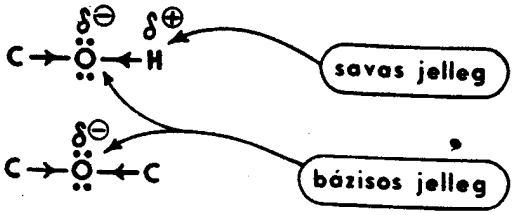
SAVAS ÉS BÁZISOS TULAJDONSÁGOK



$K_a: \sim 10^{-18}$

ACIDITÁS

$$R-O-H + :B \rightleftharpoons R-O:^{\ominus} + H:B^{\oplus}$$

alkoxid

B: $:NH_2^{\ominus}$ $:H^{\ominus}$ $:OH^{\ominus}(\rightleftharpoons)$

H–A : MeOH > EtOH > IpOH > ^{t}BuOH

:B : $MeO^{\ominus} < EtO^{\ominus} < IpO^{\ominus} < {}^t BuO^{\ominus}$

jó nukleofilek is

PÉLDÁK:

$C_2H_5OH + Na^{\oplus}\,NH_2^{\ominus} \longrightarrow C_2H_5\ddot{O}^{\ominus} + Na^{\oplus} + NH_3$

$C_2H_5OH + Na^{\oplus}\,\ddot{H}^{\ominus} \longrightarrow C_2H_5\ddot{O}^{\ominus} + Na^{\oplus} + H_2$

ALKOXID-KÉSZITÉS:

$EtOH + Na \longrightarrow EtONa + \frac{1}{2} H_2$

$3\,IpOH + Al \longrightarrow (IpO)_3Al + 1\frac{1}{2} H_2$

$^t BuOH + K \longrightarrow {}^t BuOK + \frac{1}{2} H_2$

$MeOH + Na^{\oplus}OH^{\ominus} \rightleftharpoons MeO^{\ominus} + Na^{\oplus} + H_2O$

ÉSZTERESITÉS

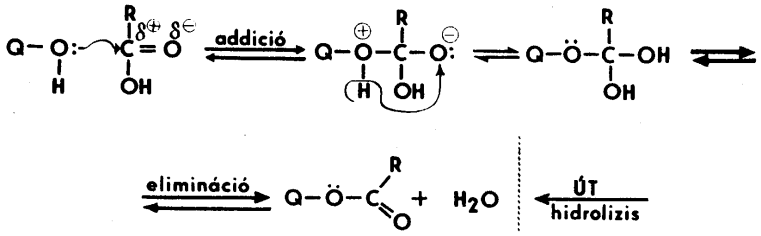
$$QOH + R{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}OH \rightleftharpoons R{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}OQ + H_2O$$

Példa:

$$C_2H_5OH + CH_3COOH \rightleftharpoons C_2H_5OCOCH_3 + H_2O$$
$$(CH_3COOC_2H_5)$$

$$\frac{[E]\,[H_2O]}{[A]\,[S]} = K \sim 4$$

A—E mechanizmus:

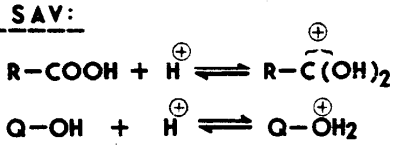


$$Me^{18}OH + MeCOOH \rightleftharpoons Me{-}^{18}O{-}C(=O){-}Me + H_2O$$

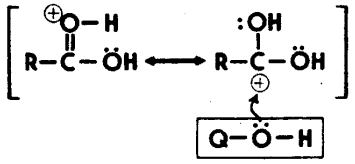
$\left.\begin{matrix}R\\Q\end{matrix}\right\}$ prim. > szek. > terc.

SAVKATALIZÁLT ÉSZTERESITÉS

KEVÉS SAV:



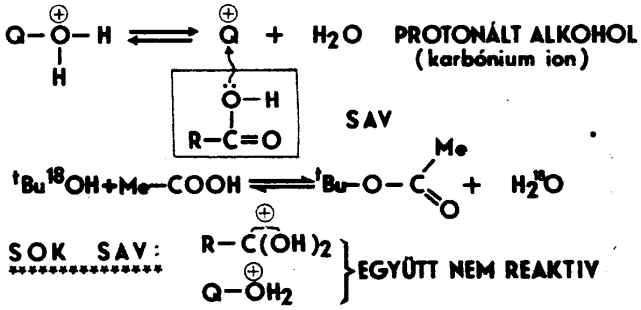
PRIMER ALKOHOL (pl.: Q = Me, Et)



PROTONÁLT SAV

ALKOHOL

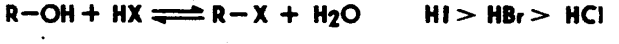
TERCIER ALKOHOL (pl.: Q = ^{t}Bu)



SOK SAV:

EGYÜTT NEM REAKTIV

REAKCIÓ HALOIDSAVVAL

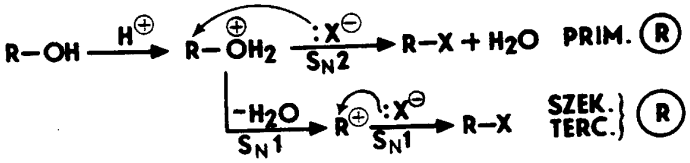


Megfordítható reakció
Preparativ alkalmazás

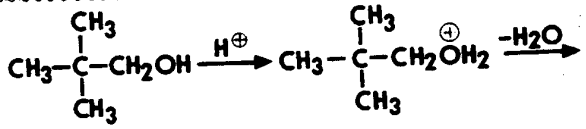
- HX felesleg
- Vizelvonás
- RX kidesztillálás
- HCl csak katalizátorral ($ZnCl_2$)

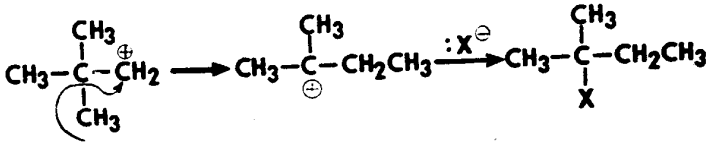
PÉLDA:

MECHANIZMUS :



KARBÓNIUM ION ÁTRENDEZŐDÉS (S_N1)



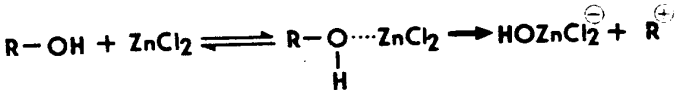


RENDŰSÉG VIZSGÁLATA LUCAS-REAGENSSEL

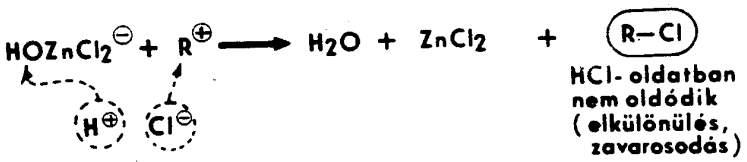
(S_N1 reakciókészség alapján)

Lucas reagens : cc. HCl + $ZnCl_2$

Reakció :



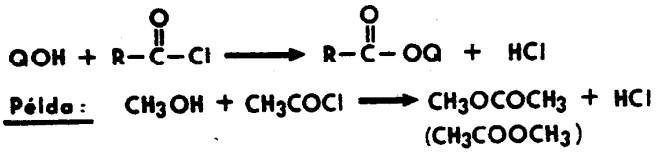
jó távozó csoport



HCl-oldatban nem oldódik (elkülönülés, zavarosodás)

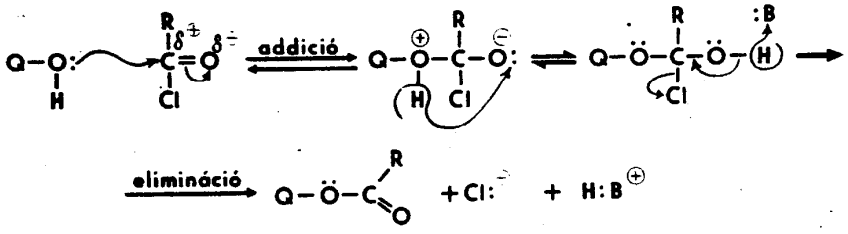
	Zavarosodás Lucas-reagenssel
tercier alkohol	azonnal
szekunder alkohol	percek mulva
primer alkohol	melegitéskor
allil-alkohol	azonnal

ACILEZÉS SAVKLORIDDAL

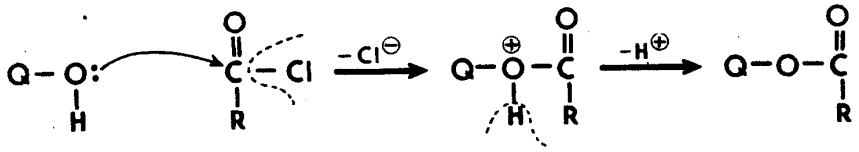


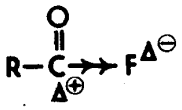
Példa: $CH_3OH + CH_3COCl \longrightarrow CH_3OCOCH_3 + HCl$ (CH_3COOCH_3)

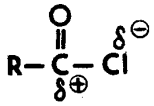
A–E mechanizmus:



S_N mechanizmus:



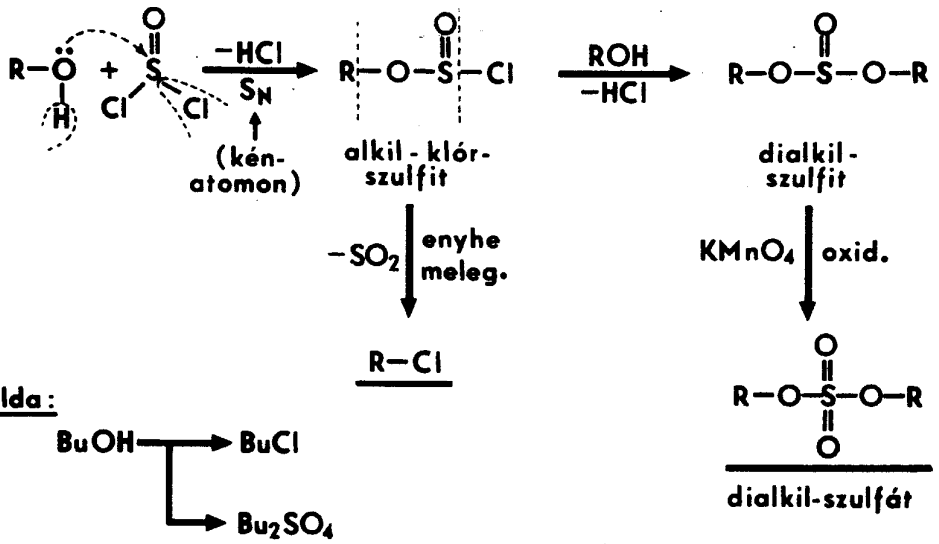




A-E esetén reaktivabb $C^{\Delta\oplus}$ miatt

S_N esetén reaktivabb $Cl^{\ominus}$ jobb távozó csoport

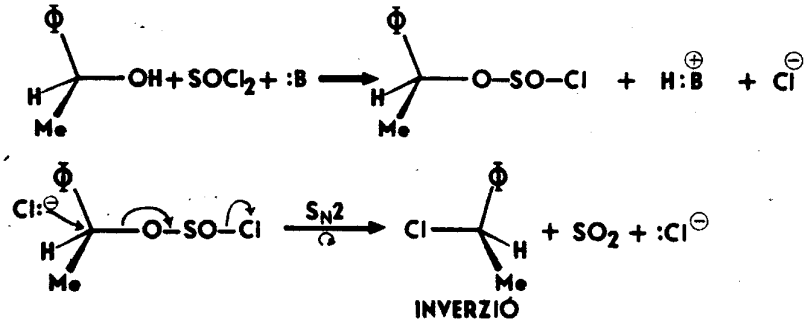
REAKCIÓ TIONIL-KLORIDDAL



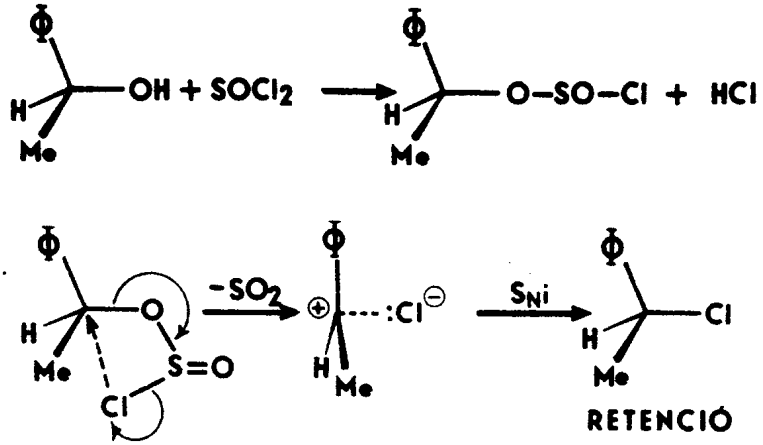
Példa:

A REAKCIÓ SZTEREOKÉMIÁJA

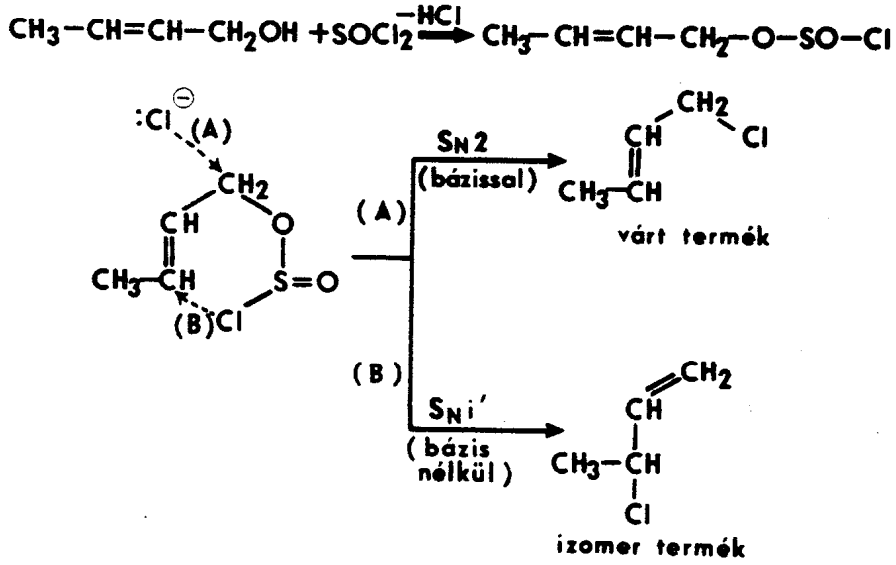
(a) bázis jelenlétében



(b) bázis nélkül

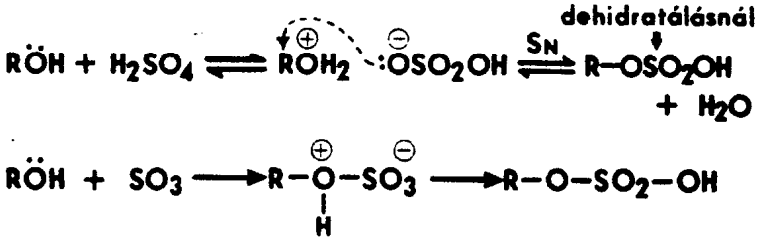


REAKCIÓ ÁTRENDEZŐDÉSSEL (S_Ni' reakció)

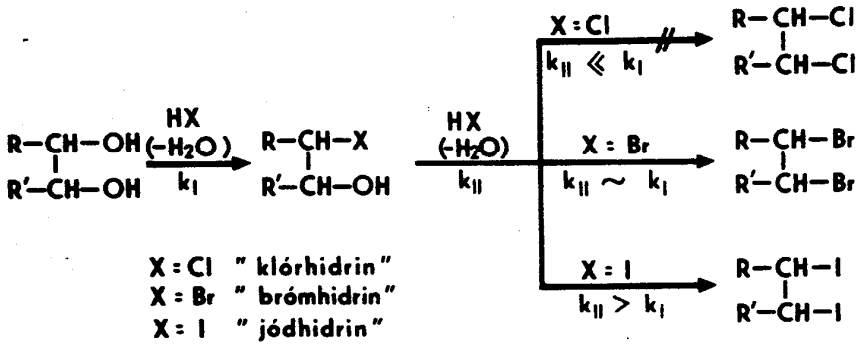


REAKCIÓ KÉNSAVVAL

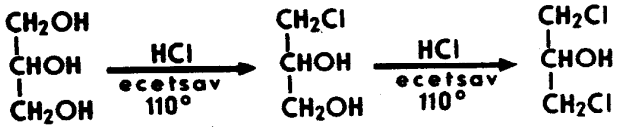
kulcs-intermedier kénsavas dehidratálásnál



VICINÁLIS DIOLOK REAKCIÓJA HALOIDSAVAKKAL



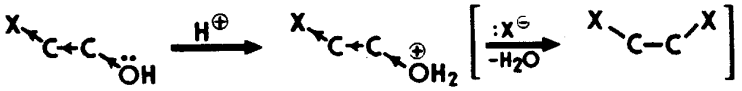
Példa:



SZOMSZÉDCSOPORT-RÉSZVÉTEL
S_Ni REAKCIÓ

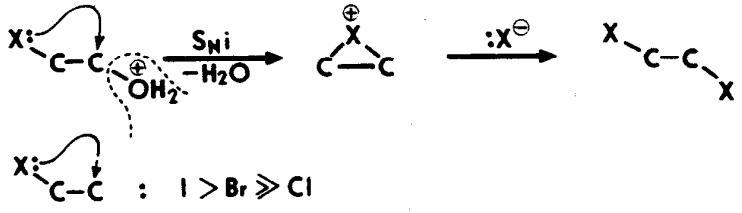
HALOHIDRINEK REAKCIÓJA HALOIDSAVAKKAL

ⓐ Induktiv effektus gátol (csökkent protonálódás)



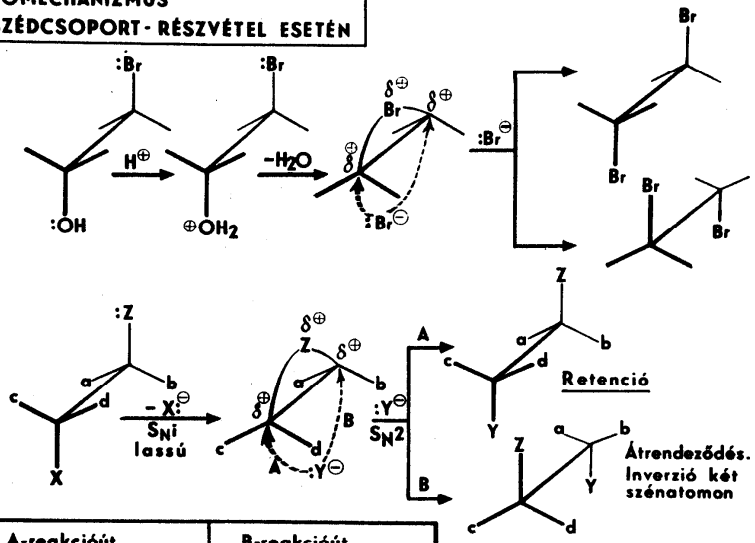
X←C : Cl > Br > I

ⓑ Szomszédcsoport-részvétel segít

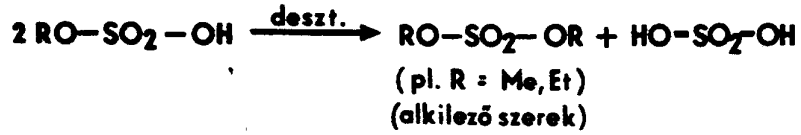


X–C–C : I > Br ≫ Cl

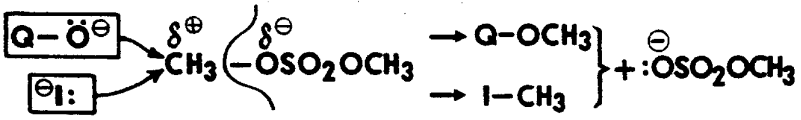
SZTEREOMECHANIZMUS SZOMSZÉDCSOPORT-RÉSZVÉTEL ESETÉN



	A-reakcióút	B-reakcióút
C_x-atom	S_Ni inverzió, S_N2 inverzió } retenció	S_Ni inverzió } átrendeződés
C_z-atom	——— (retenció)	S_N2 inverzió } átrendeződés

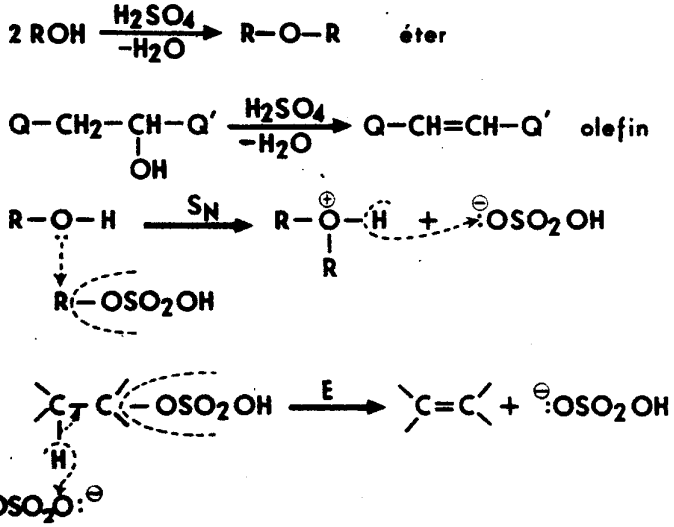


METILEZÉS

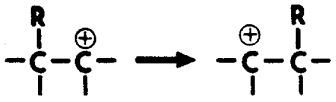


Q	Előállítás
R (pl. Me, Et)	metil-alkil-éter
Ar (pl. C_6H_5)	metil-aril-éter
Acil	metil-észter

DEHIDRATÁLÁS

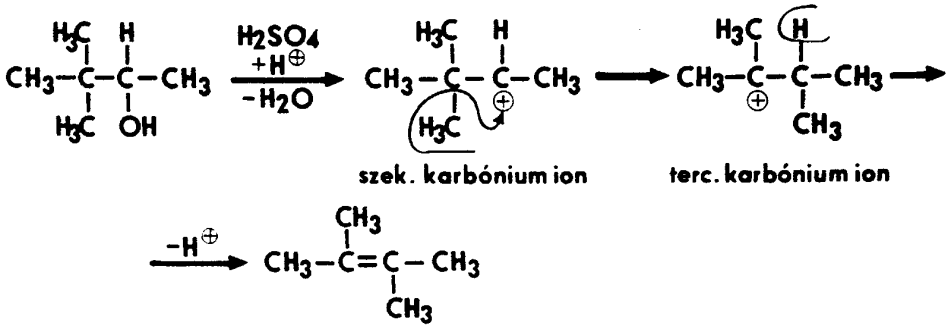


DEHIDRATÁLÁS ÁTRENDEZŐDÉSSEL

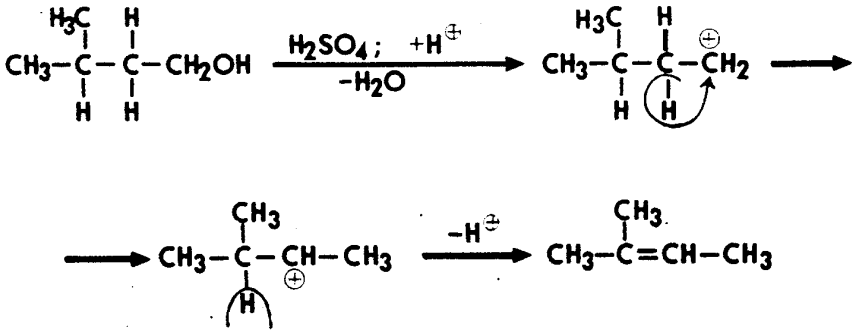


R = alkil; aril; H

(A) METIL-ANIONOTRÓPIA

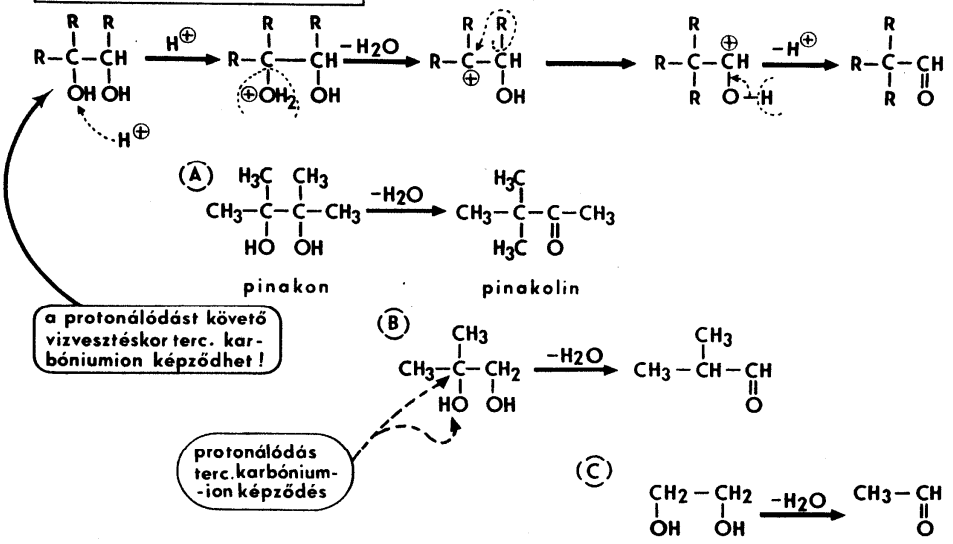


(B) HIDROGÉN-ANIONOTRÓPIA

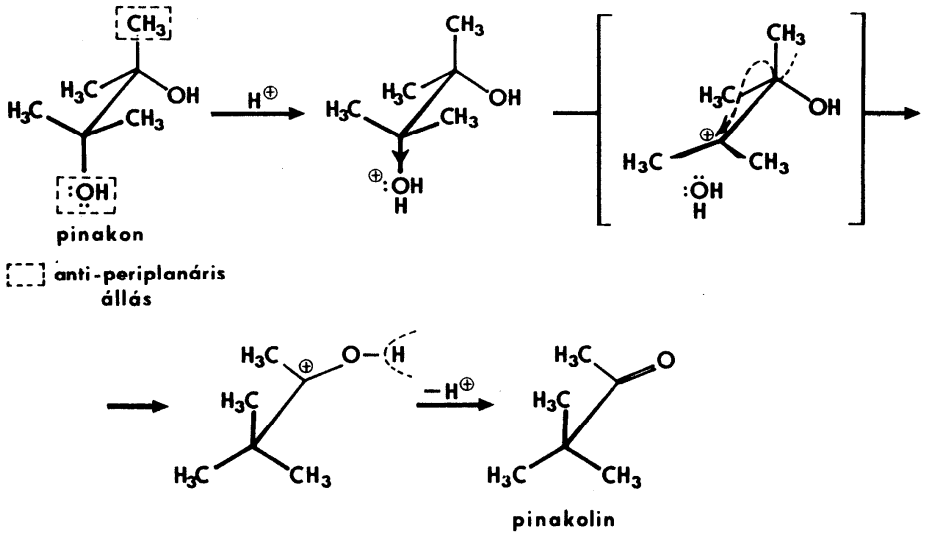


GLIKOLOK DEHIDRATÁLÁSA | **PINAKOLIN-ÁTRENDEZŐDÉS**

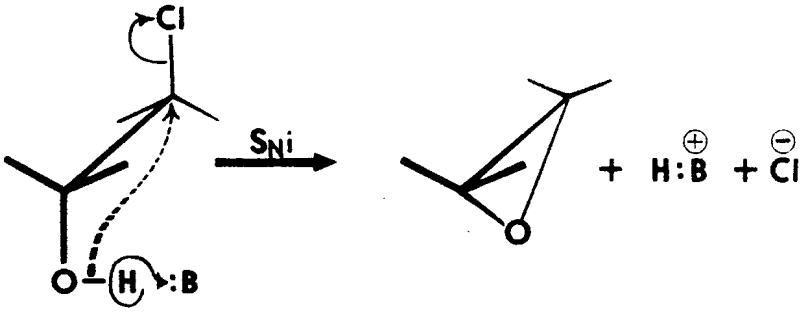
KARBONILKÉPZŐ ELIMINÁCIÓ



SZTEREOMECHANIZMUS

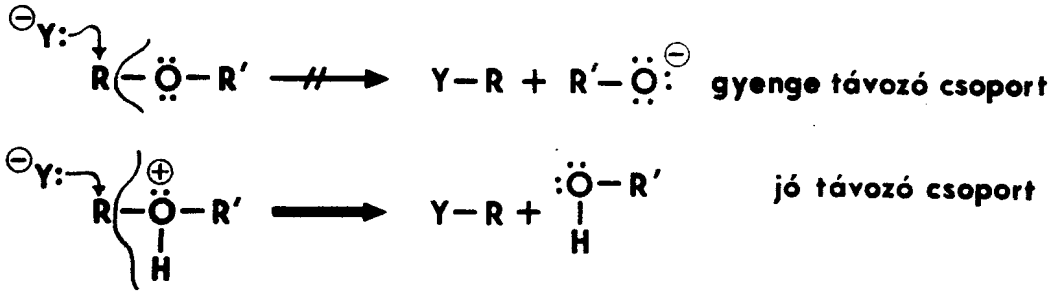


HALOHIDRINEK ÁTALAKITÁSA EPOXIDOKKÁ

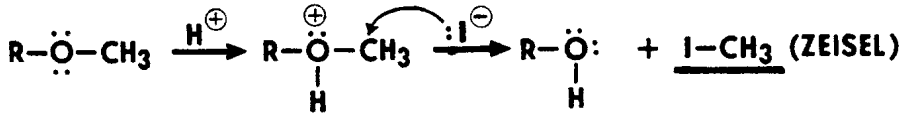


ÉTERKÖTÉS HASITÁSA

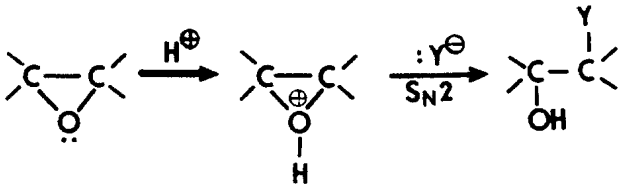
HASITÁS TÖMÉNY HALOIDSAVVAL



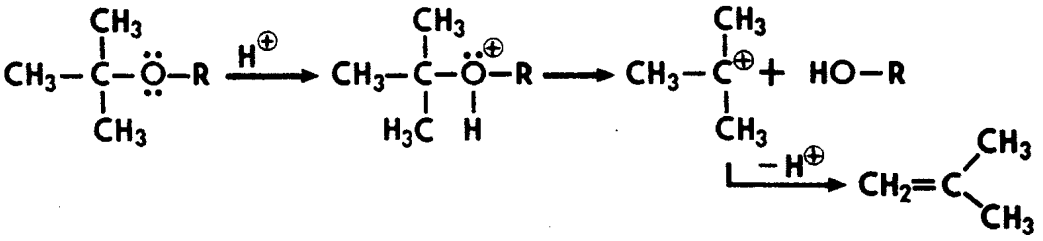
METIL-ÉTEREK HASITÁSA ("METOXI - MEGHATÁROZÁS")



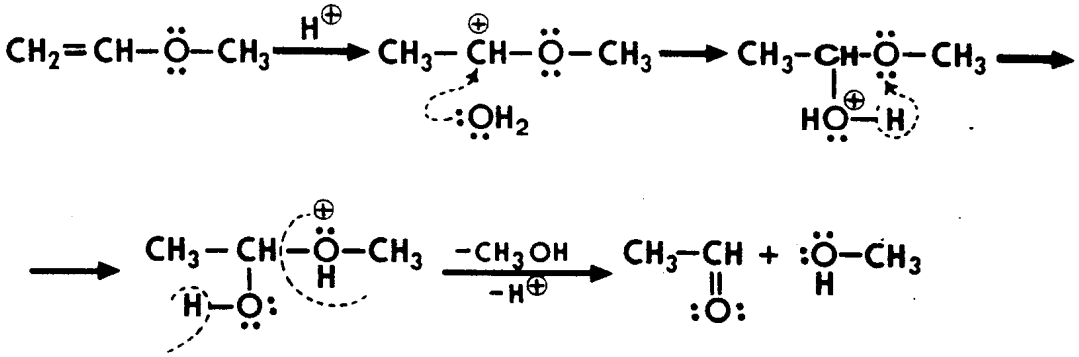
EPOXIDOK HASITÁSA



terc. ALKIL-ÉTEREK HASITÁSA

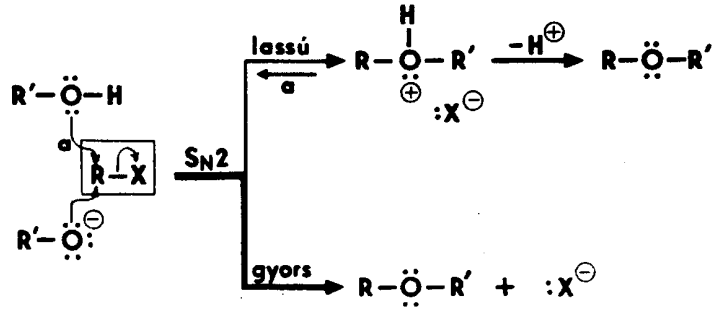


VINIL-ÉTEREK HASITÁSA (Könnyű)



ALKOXIDOK ALKILEZÉSE ALKIL-HALOGENIDEKKEL

ÉTREK WILLIAMSON-SZINTÉZISE

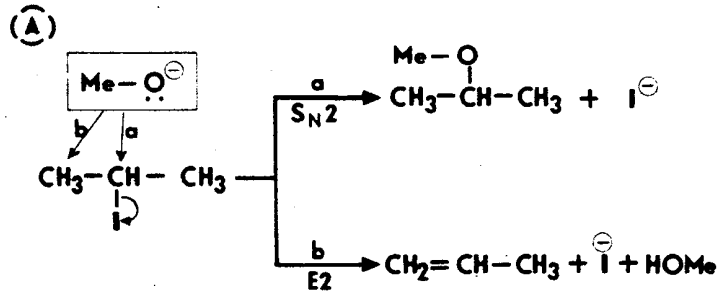


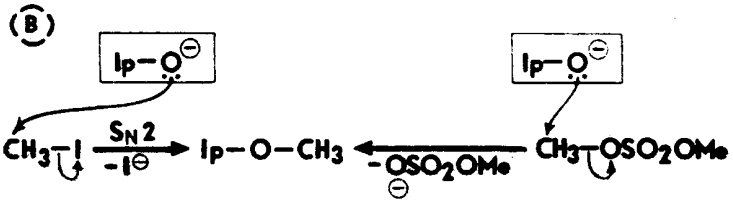
Pl.: $MeI + EtOH \rightleftharpoons Me-O-Et + HI$

$MeI + EtO^{\ominus} \longrightarrow Me-O-Et + I^{\ominus}$

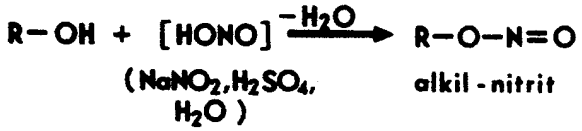
Lehetséges mellékreakció: E2 ($RO^{\ominus}$ erős bázis)

$Me-O-Ip$ (A) $IpI + {}^{\ominus}OMe$ } (B) $MeI + {}^{\ominus}OIp$ } $\longrightarrow Me-O-Ip + I^{\ominus}$

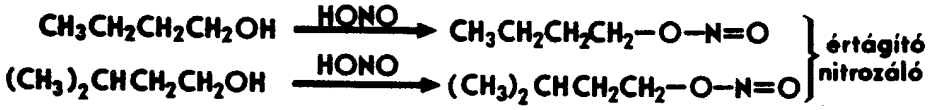




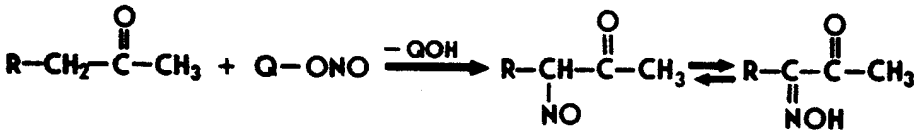
REAKCIÓ SALÉTROMOSSAVVAL



Példa:

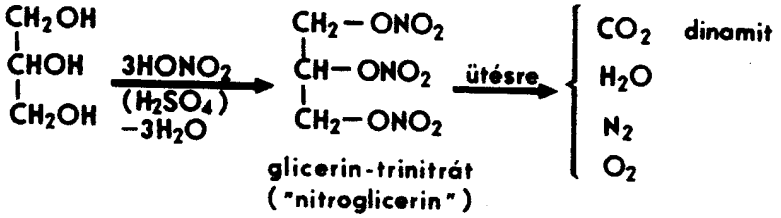


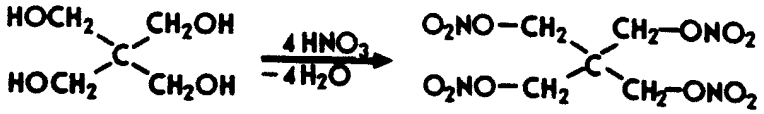
Nitrozálás:



REAKCIÓ SALÉTROMSAVVAL

Pl:





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