

KONJUGÁLT SZÉNLANCÚ POLIMEREK

Motiváció:

2000 kémiai Nobel-díjasai



Alan J. Heeger

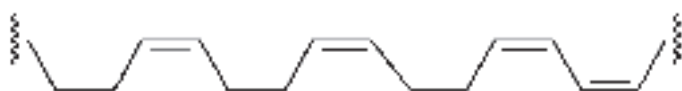


Alan G. MacDiarmid

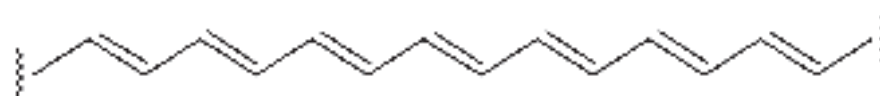


Hideki Shirakawa

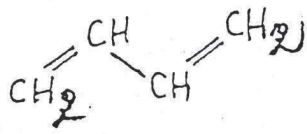
A díjat a vezető polimerek (poliacetilén) felfedezéséért (1974) és kidolgozásáért ítélték oda.



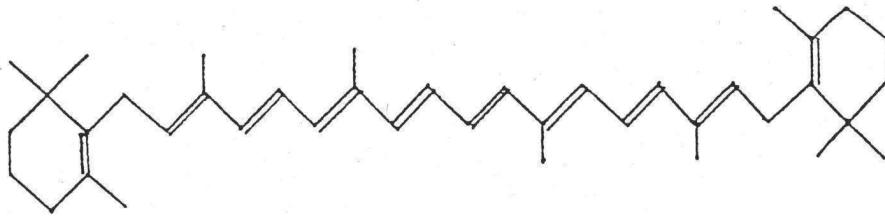
cis z-poliacetilén



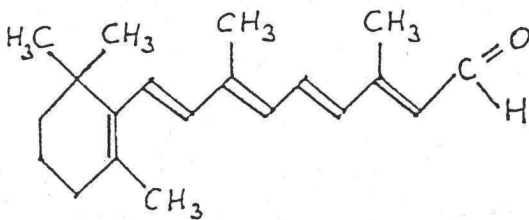
trans z-poliacetilén



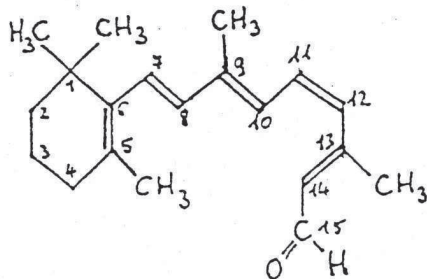
butadién



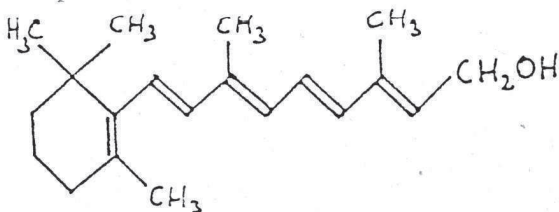
dihidro-β-karotin (8)



all-transz-retinál

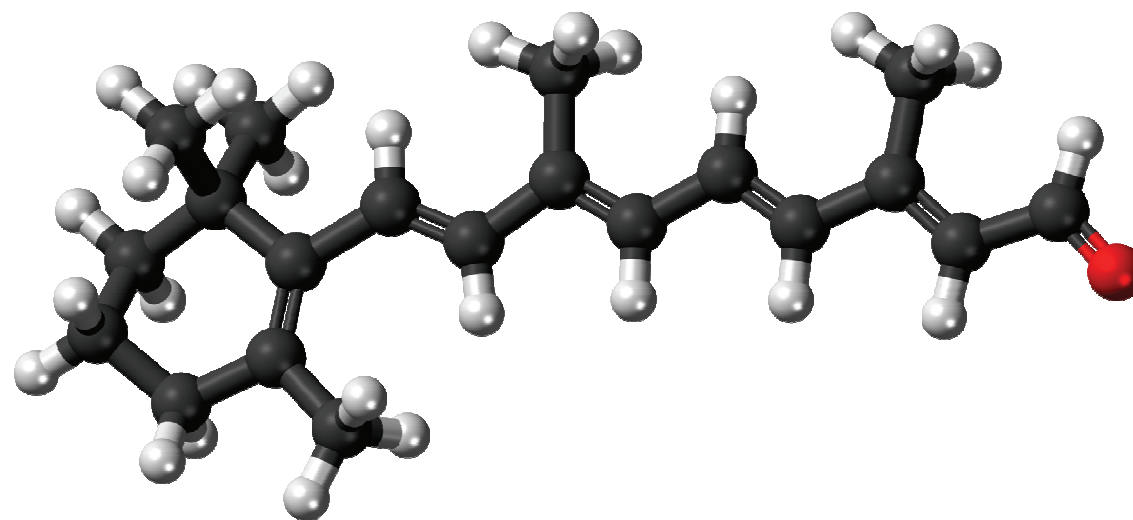


11-cisz-retinál

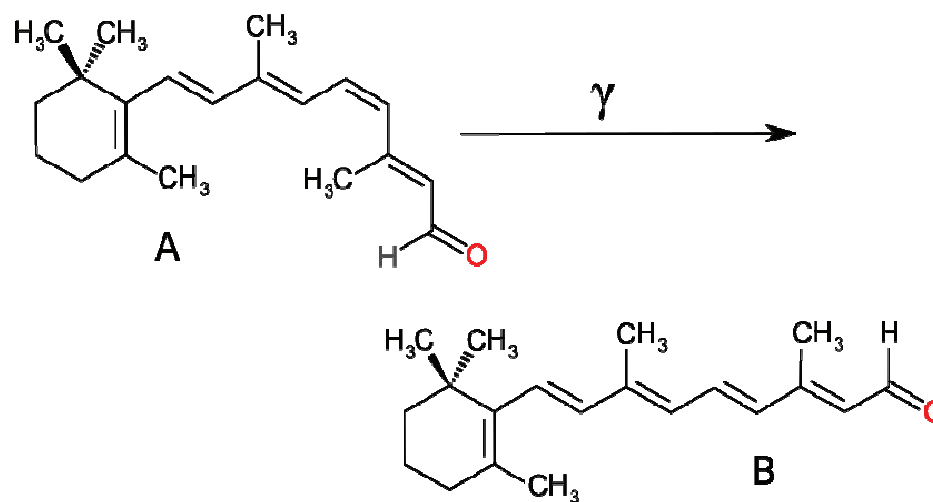


all-transz-retinol (A-vitamin)

Példák konjugált kismolekulákra



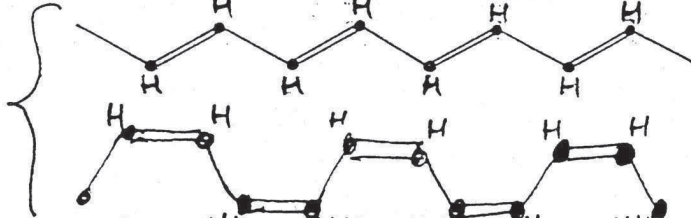
All-trans retinal



Retinal: cis-trans transition

KONJUGÁLT SZÉNLANCÚ POLIMEREK

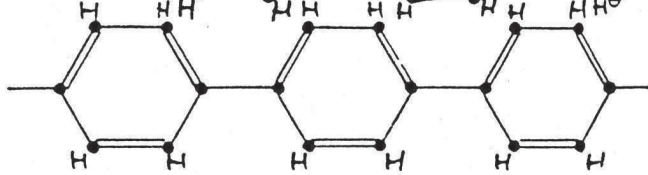
$(CH)_x$



trans-polyacetylene

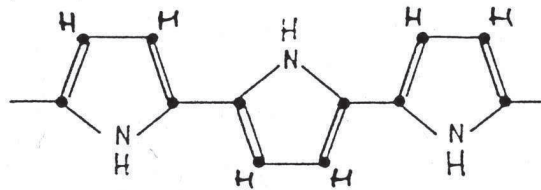
cis-polyacetylene

PPP



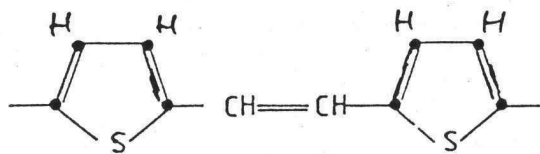
polyparaphenylene

PPY



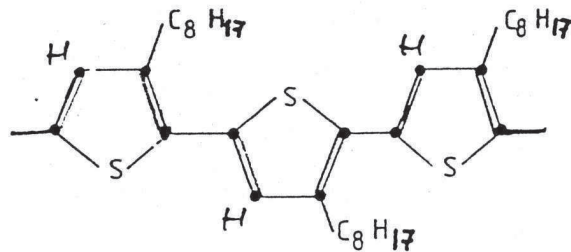
polypyrrole

PTV



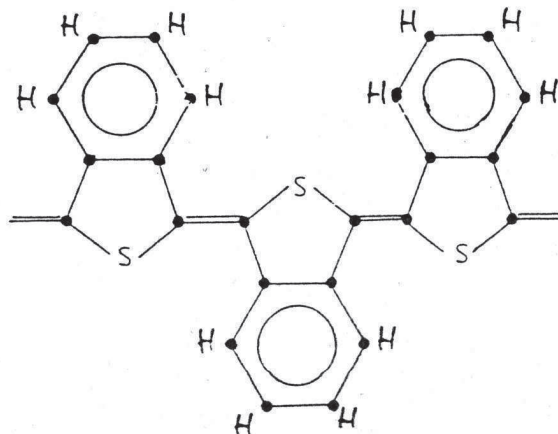
poly(2,5-thienylene vinylene)

POT



polyoctylthiophene

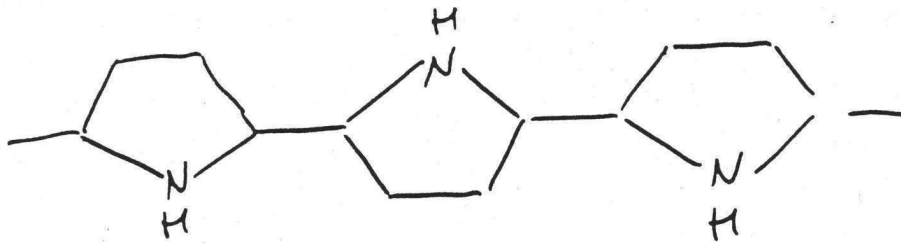
PITN



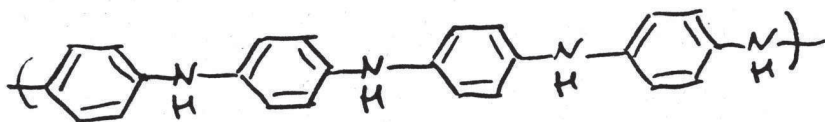
polyisothianaphthene

poly(1,3-benzothienophene)

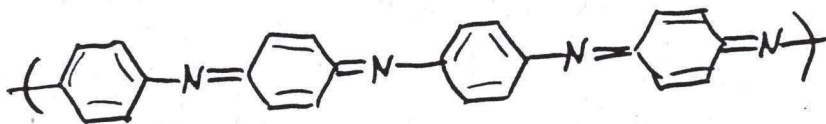
polipirrol



polianilin



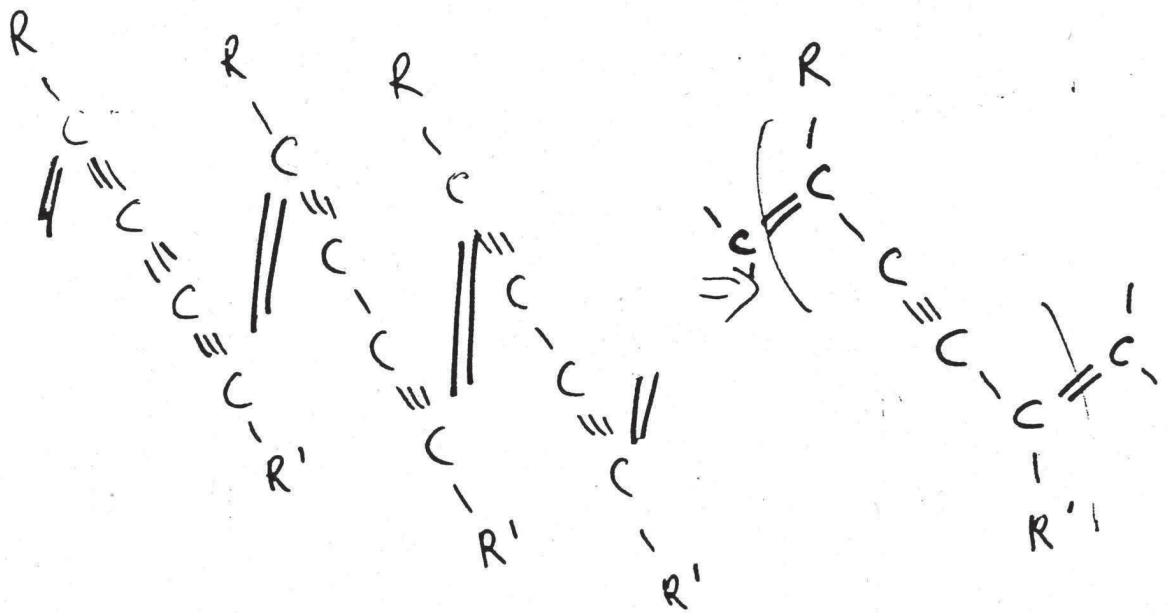
leuco emeraldin



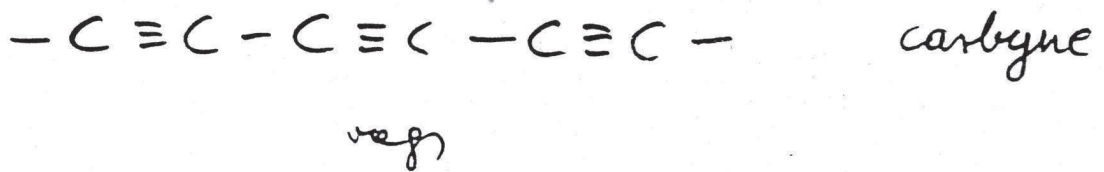
pernigraniline.

Három kötést tartalmazó polimerek

- polidiacetilén(ek) 



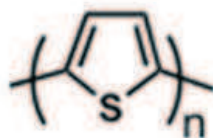
- polycarbyne



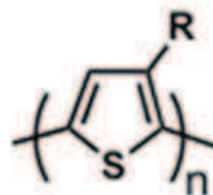
Common conjugated polymers



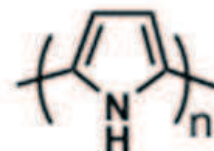
**Polyacetylene
(PA)**



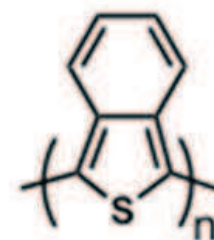
**Polythiophene
(PT)**



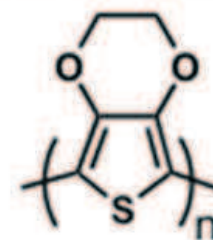
**Poly(3-alkyl)thiophene
(P3AT)**



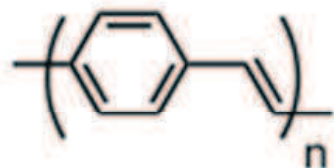
**Polypyrrole
(PPy)**



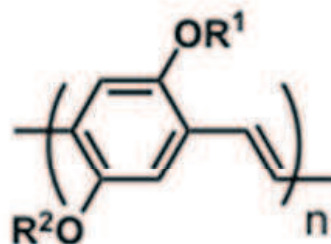
**Polyisothianaphthene
(PPy)**



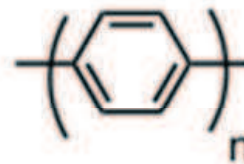
**Polyethylenedioxythiophene
(PEDOT)**



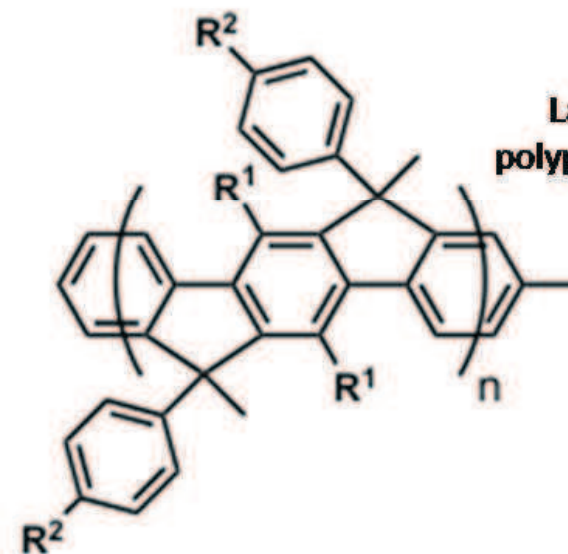
**Polyparaphenylene
vinylene
(PPV)**



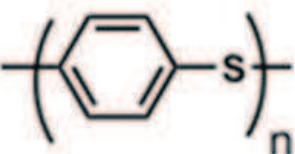
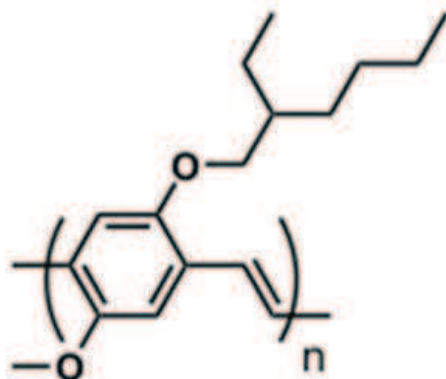
**Poly(2,5-dialkyloxy)-
paraphenylenevinylene
(eg. MEH-PPV)**



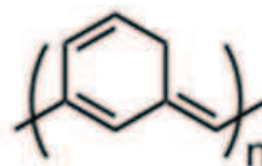
**Poly-
paraphenylene
(PPP)**



**Ladder-type
polyparaphenylene
(LPPP)**

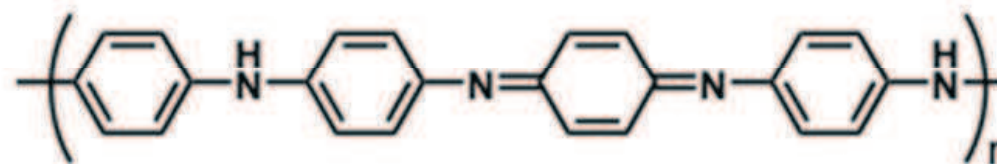


**Polyparaphenylene
sulphide
(PPS)**



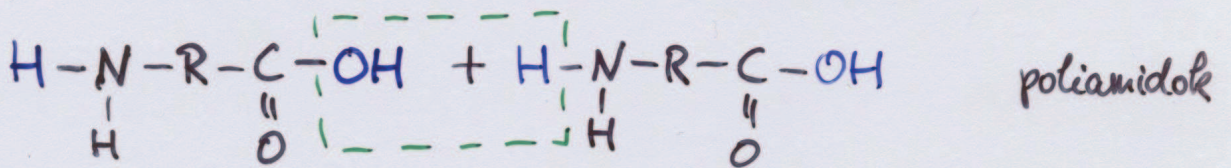
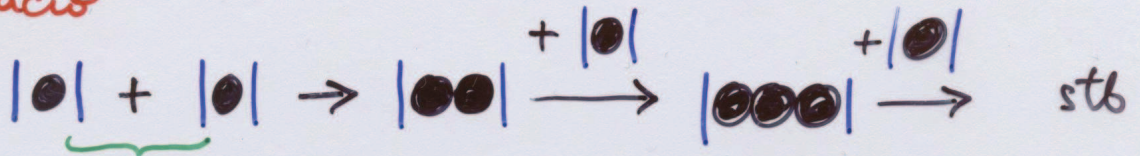
**Polyheptadiyne
(PHT)**

**Poly(3-
hexyl)thiophene
(P3HT)**

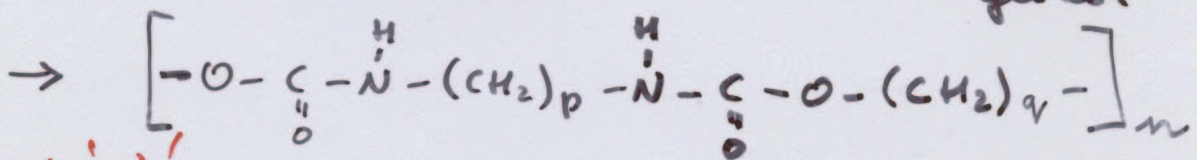
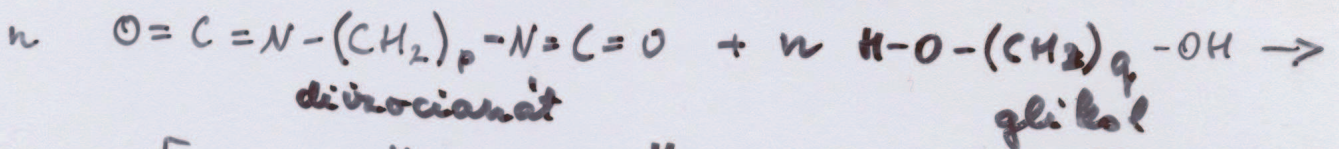
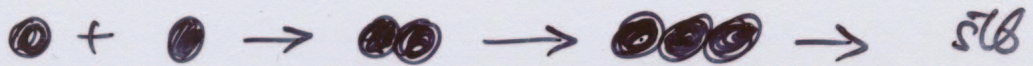


POLIMEREK ELŐÁLLÍTÁSA

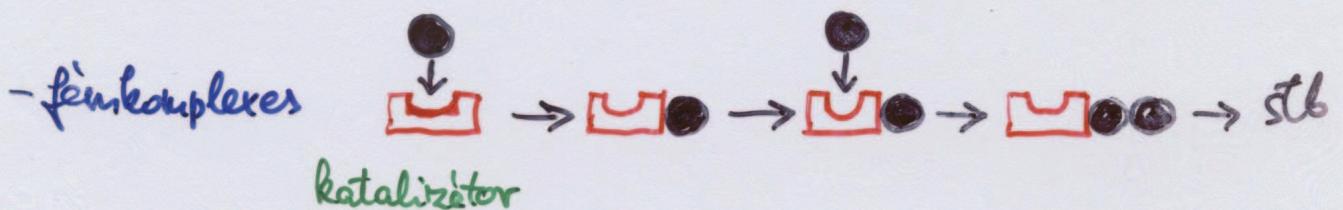
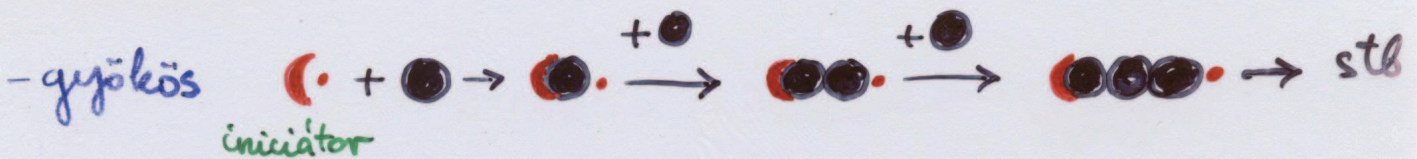
polikondenzáció



poliaddíció

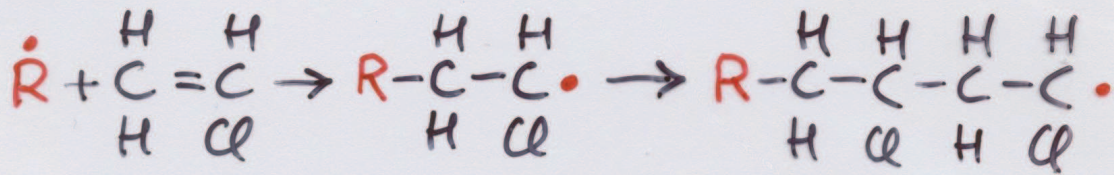


polimerizáció



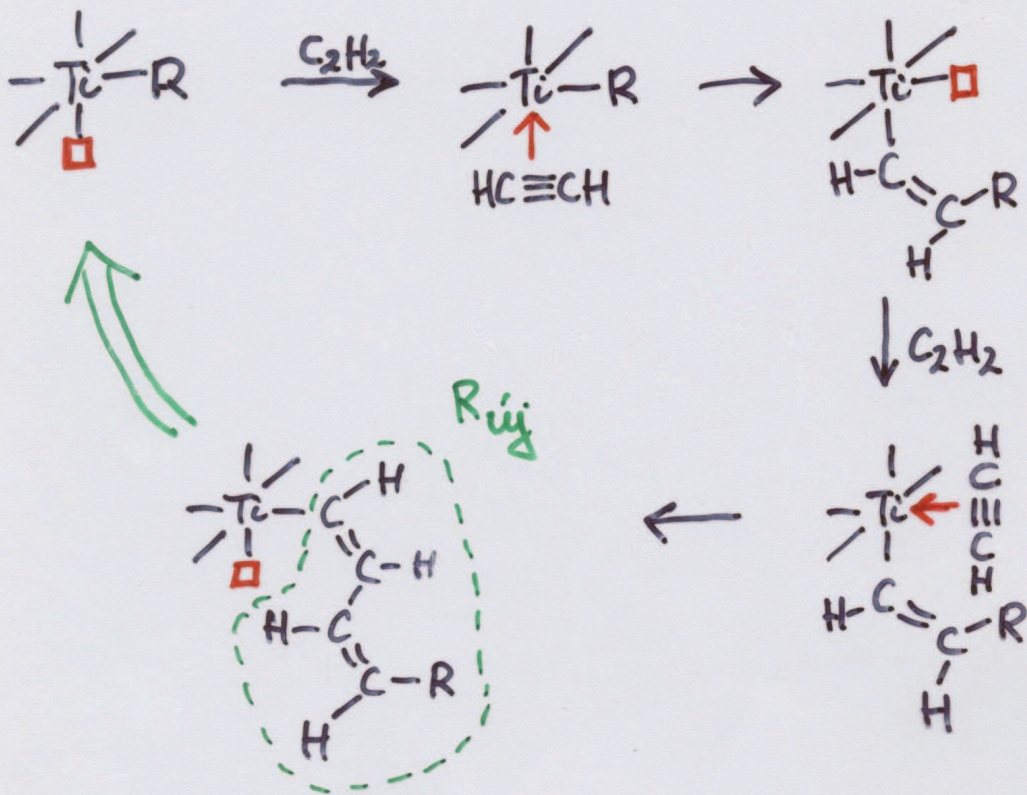
Példák polimerizációra

gyökös



PVC

fémkomplexes



Poliacetilén

(Ziegler-Natta katalizátor: $\text{AlEt}_3 + (\text{Bu})_2\text{TiCl}_2$ toluolban)