

Nobel Prize in Chemistry, 2000
for the discovery of **polyacetylene** (1974)
(prototype of the family of **conjugated polymers**)



Alan J. Heeger
1936-

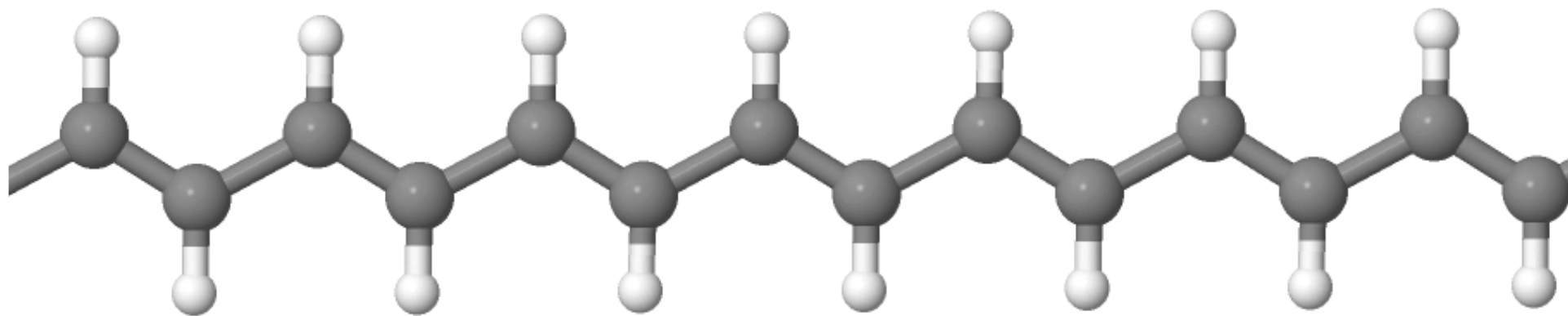


Alan G. MacDiarmid
1927-2007

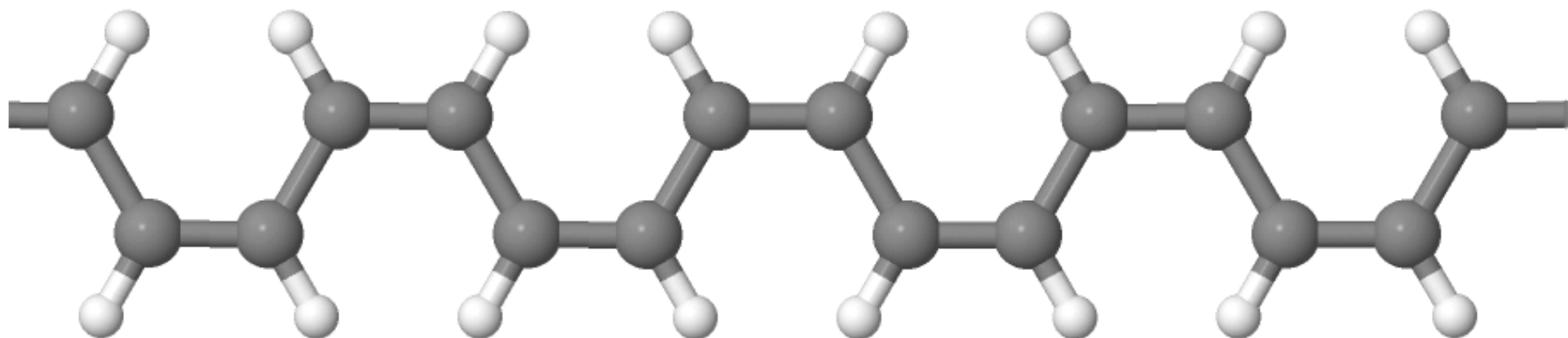


Hideki Shirakawa
1936-

polyacetylene

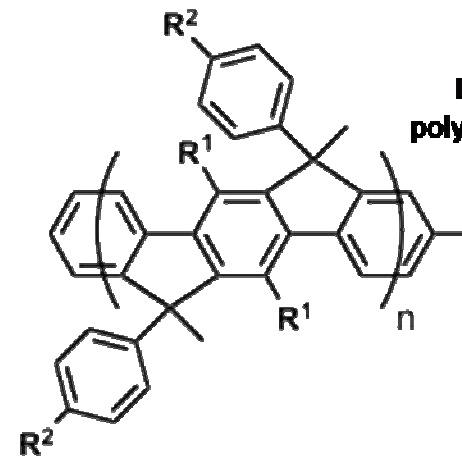
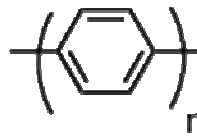
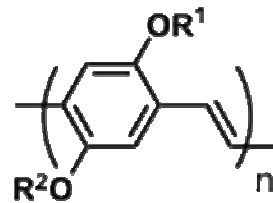
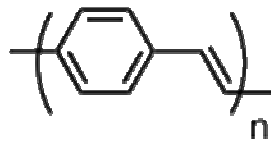
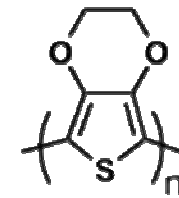
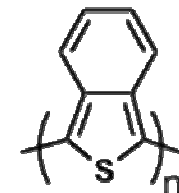
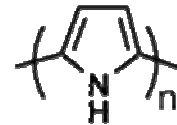
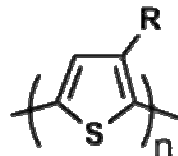
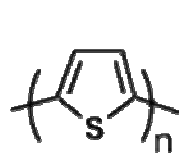
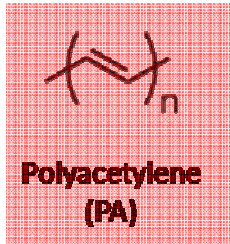


trans (trans-transoid)



cis (cis-transoid)

Common conjugated polymers

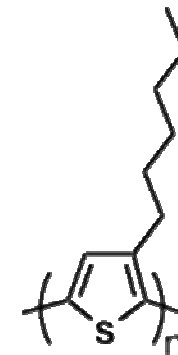
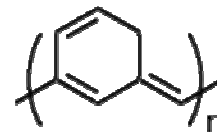
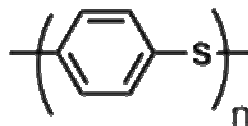
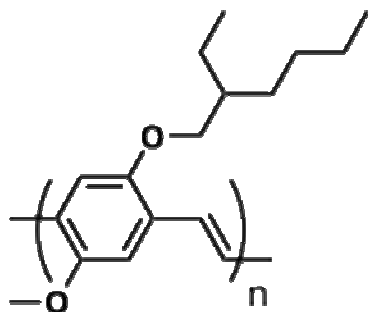


Poly(4-phenylenevinylene) (PPV)

Poly(2,5-dialkoxy-4-phenylenevinylene) (eg. MEH-PPV)

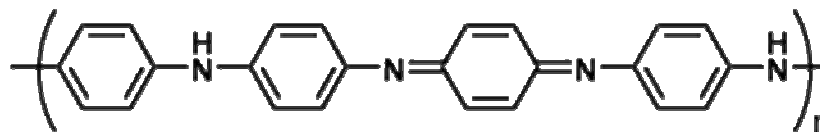
Poly(p-phenylene) (PPP)

Poly(3-hexylthiophene) (P3HT)



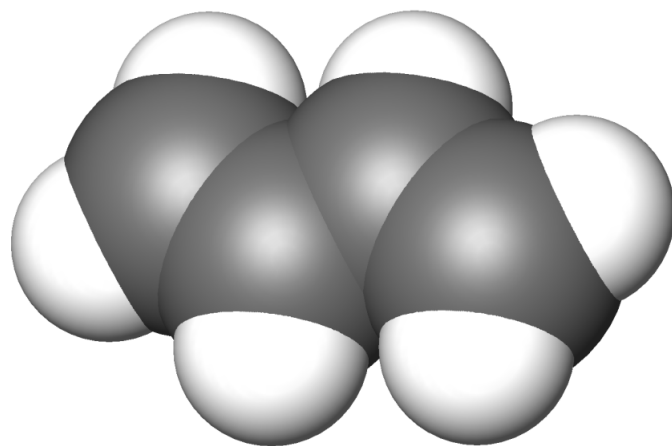
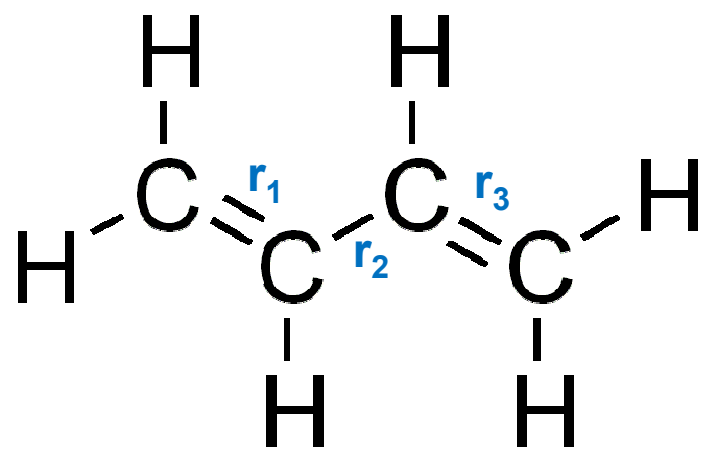
Poly(p-phenylene sulphide) (PPS)

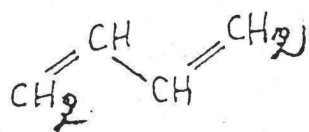
Polyheptadiyne (PHT)



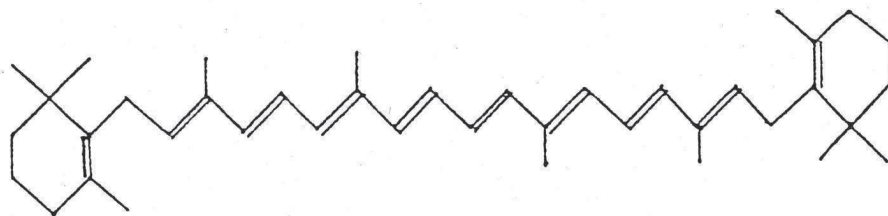
Polyaniline, PANI

trans-butadiene

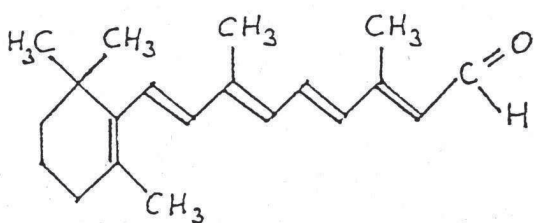




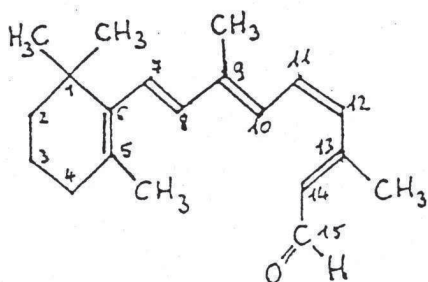
butadién



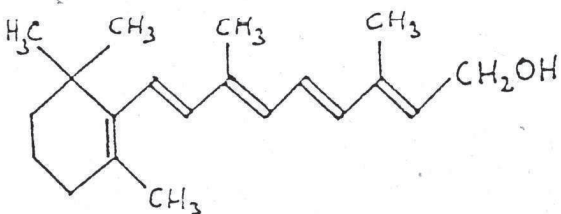
dihidro- β -karotin (8)



all-transz-retinál

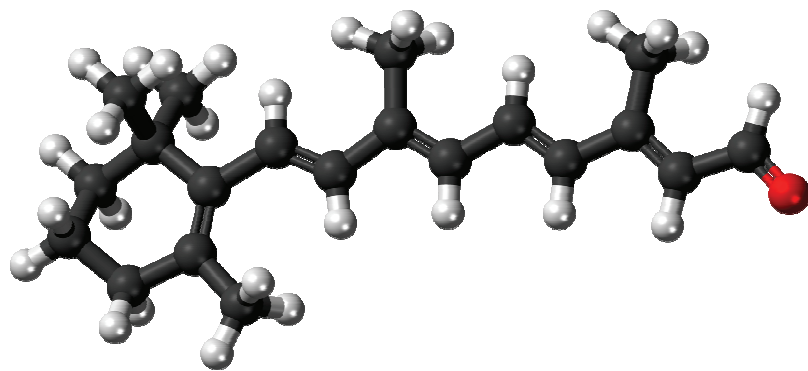


11-cisz-retinál

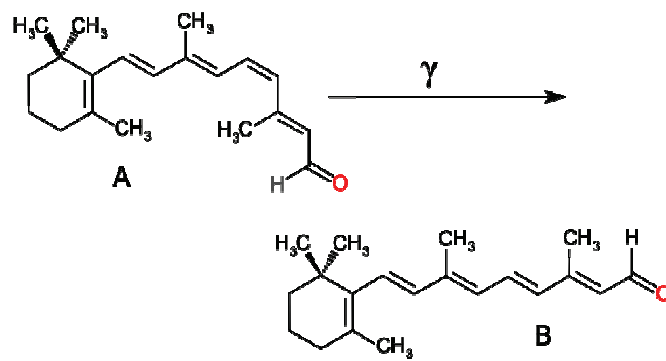


all-transz-retinol (A-vitamin)

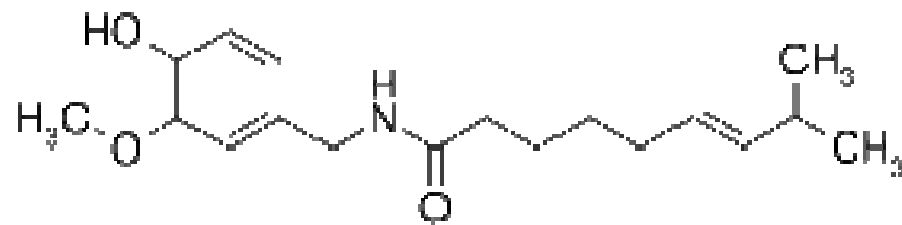
Példák konjugált kismolekulákra



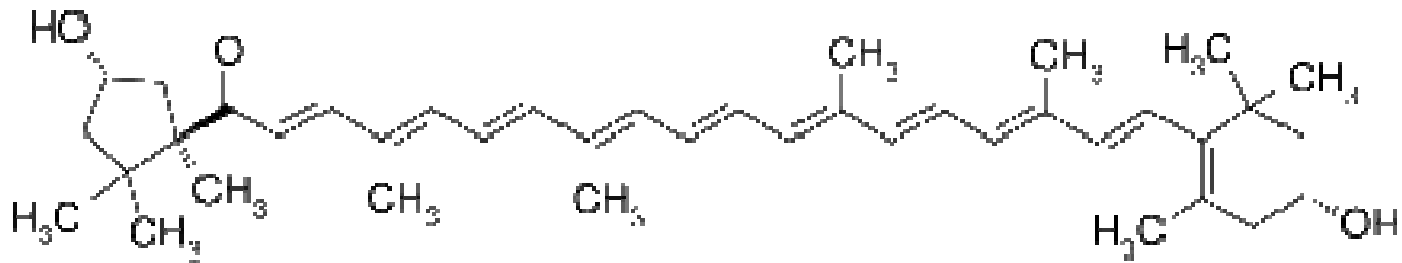
All-trans retinal



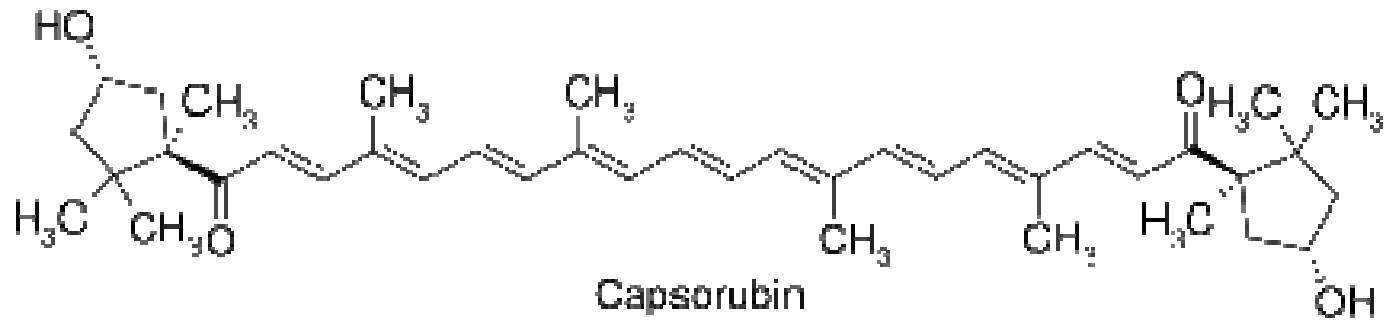
Retinal: cis-trans transition



Capsaicin



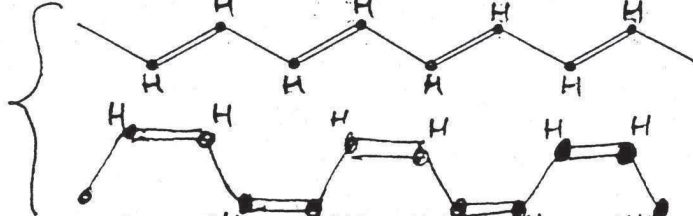
Capsanthin



Capsorubin

KONJUGÁLT SZÉNLANCÚ POLIMEREK

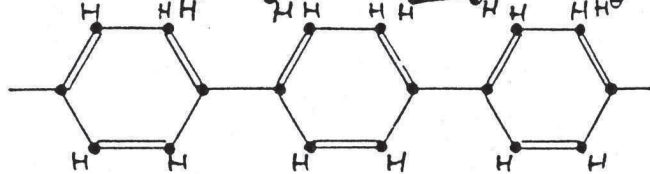
$(CH)_x$



trans-polyacetylene

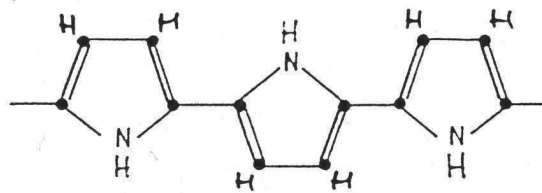
cis-polyacetylene

PPP



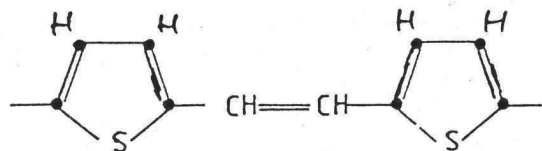
polyparaphenylene

PPY



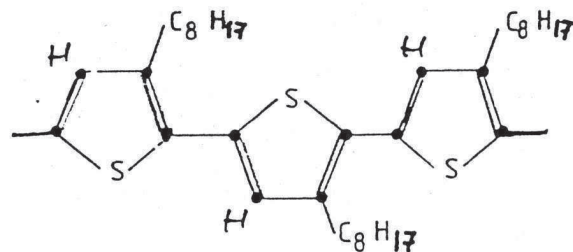
polypyrrole

PTV



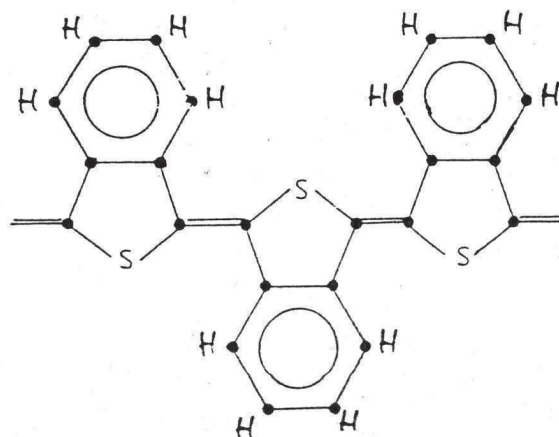
poly(2,5-thienylene vinylene)

POT



polyoctylthiophene

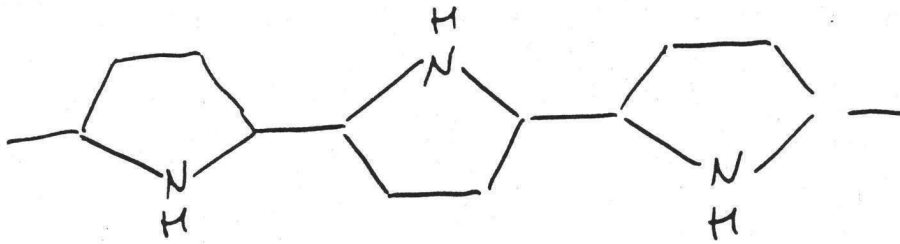
PITN



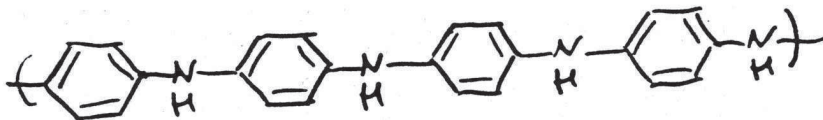
polyisothianaphthene

poly(1,3-benzothienophene)

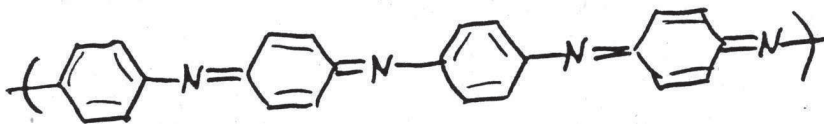
polipirrol



polianilin



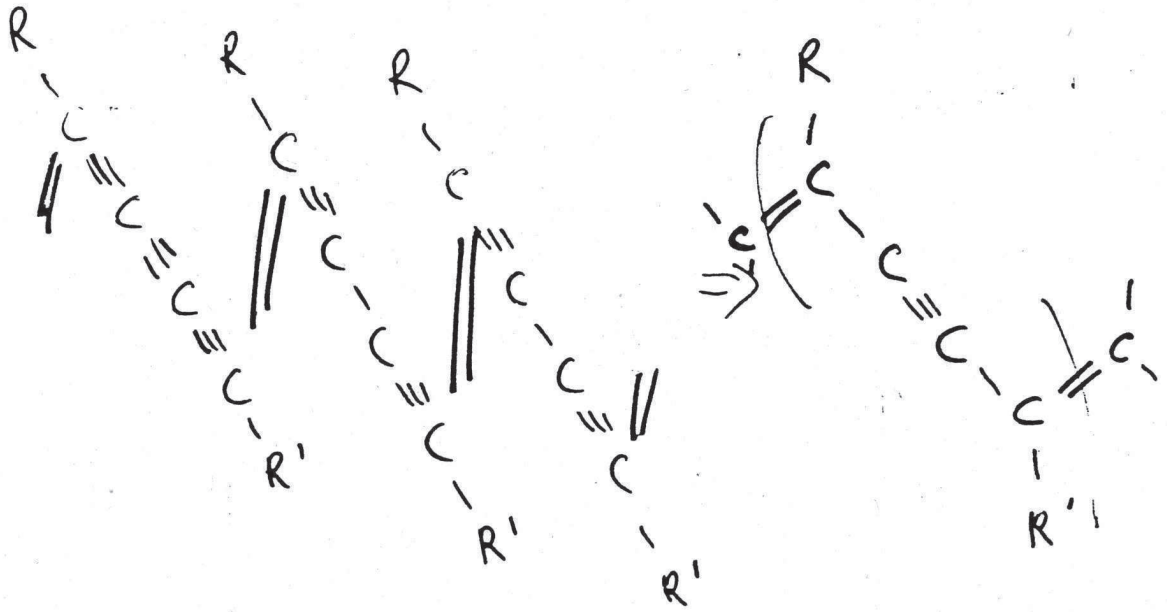
leuco emeraldin



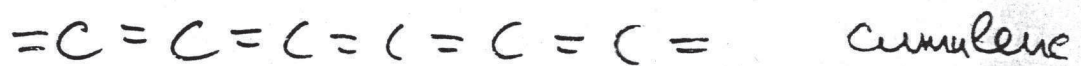
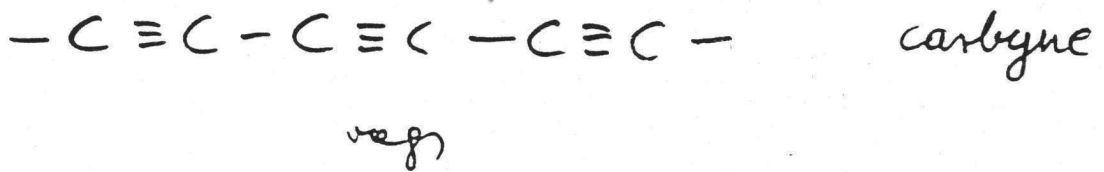
pernigraniline.

Három kötést tartalmazó polimerek

- polidiacetilén(ek) 

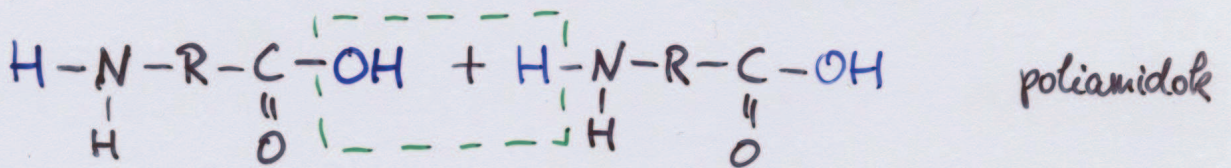
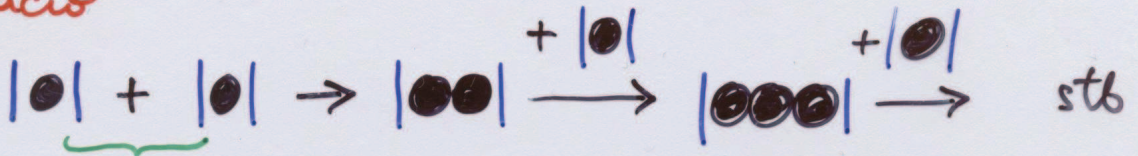


- polycarbyne

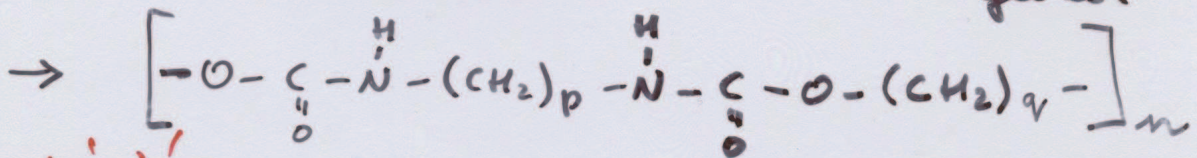
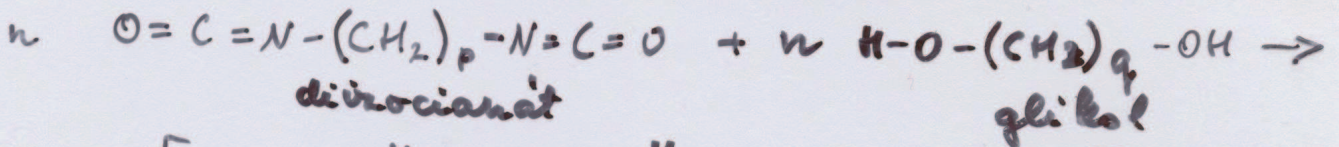
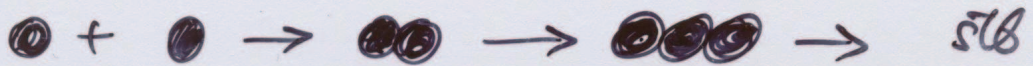


POLIMEREK ELŐÁLLÍTÁSA

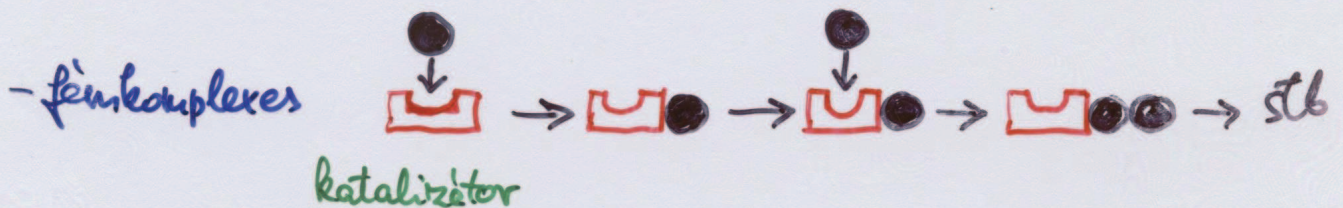
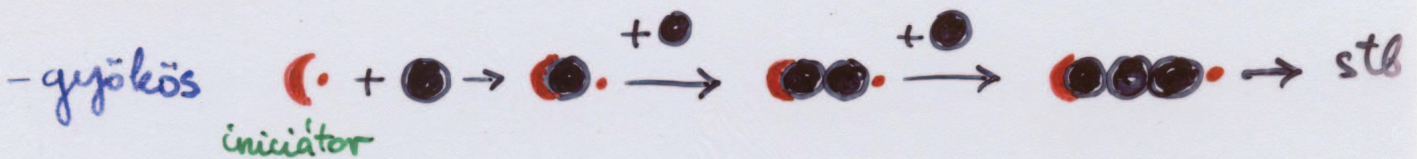
polikondenzáció



poliaddíció

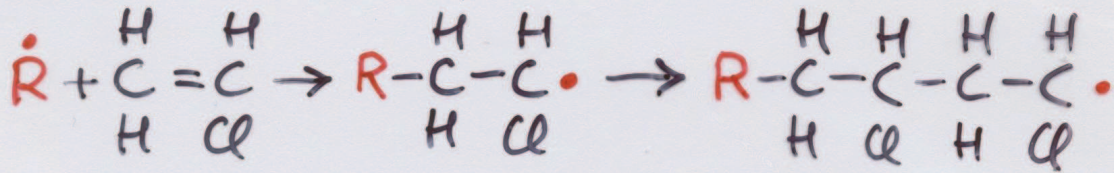


polimerizáció



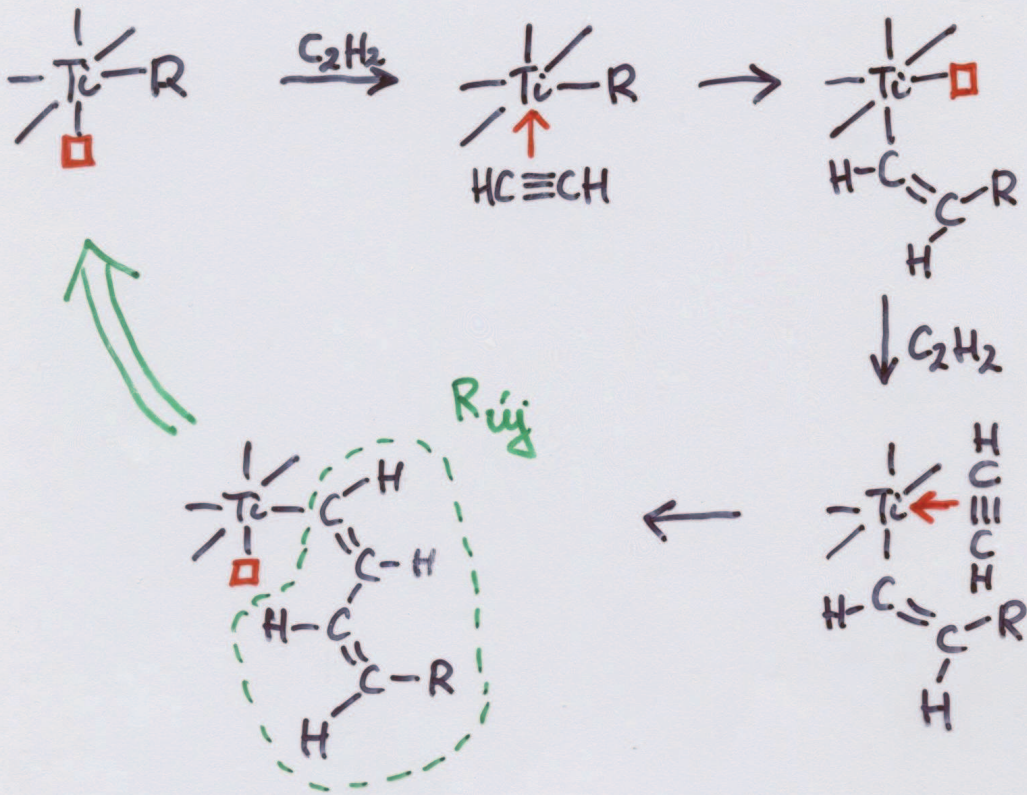
Példák polimerizációra

gyökös



PVC

fémkomplexes



Poliacetilén

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