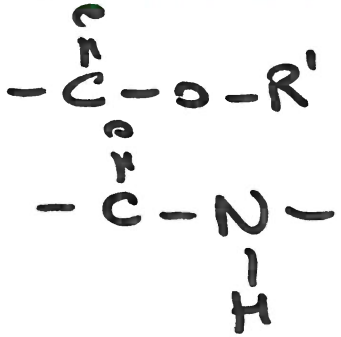
# POLIMERI DI CONDENSAZIONE

1) POLIESTERI

2) POLIAMMIDI

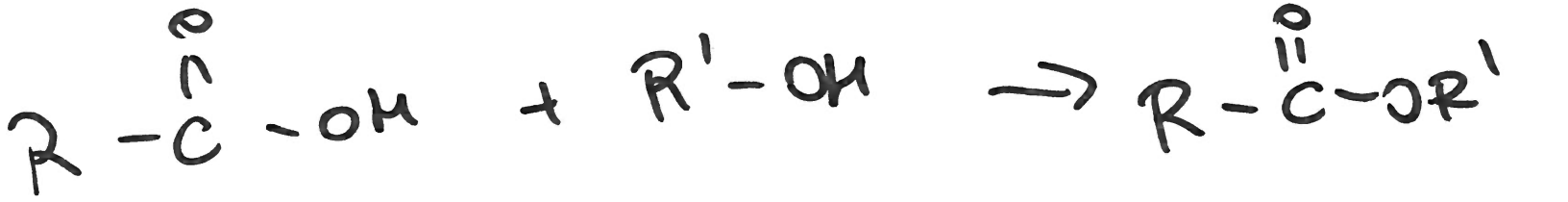
3) POLIURETANI

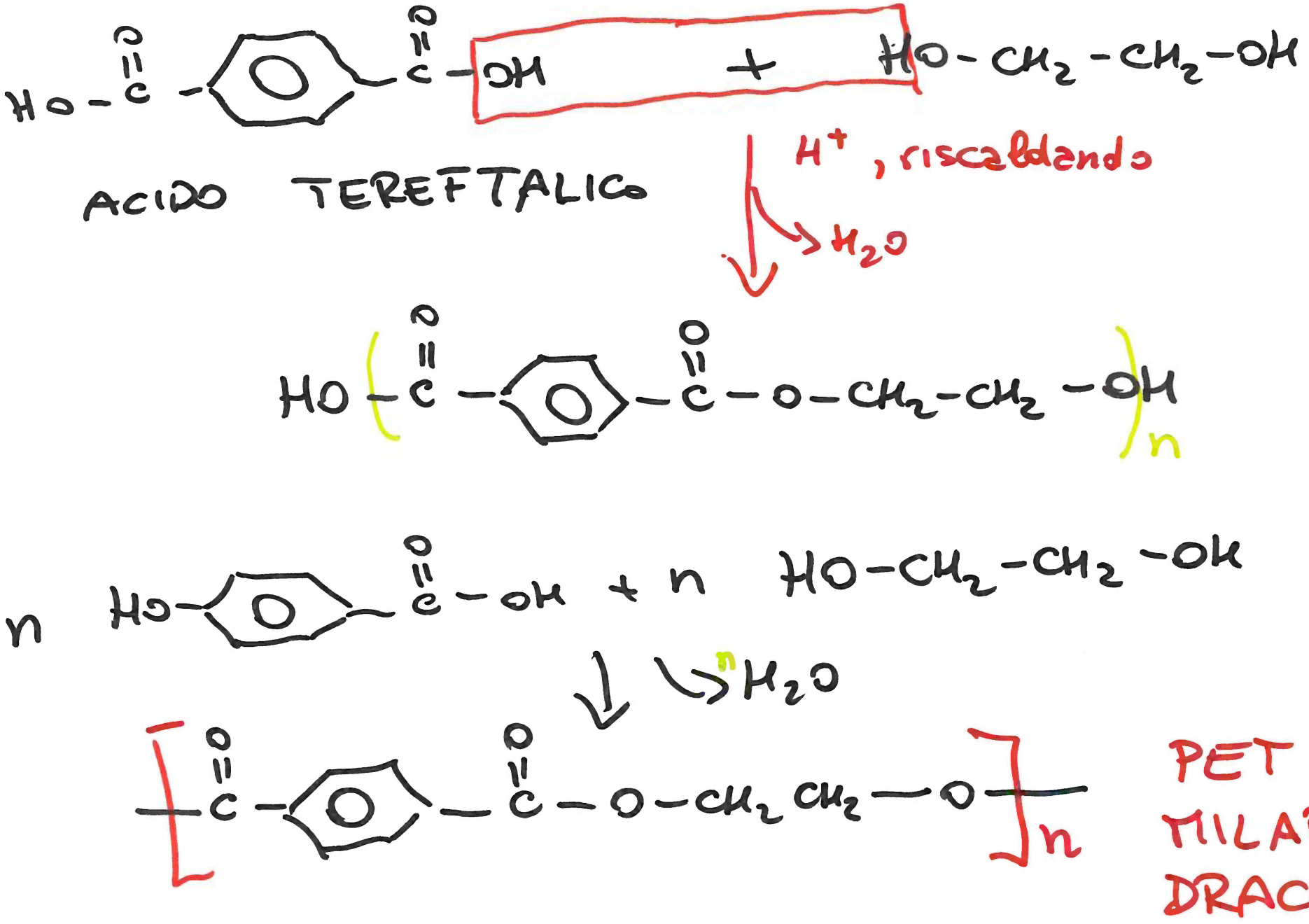


## POLIESTERI

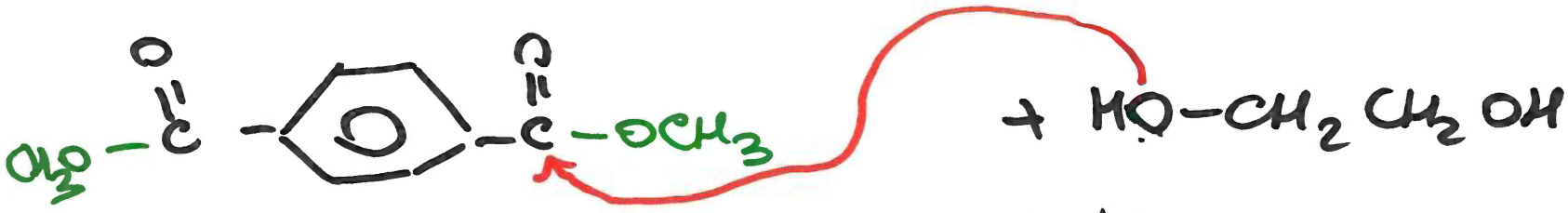
PET POLIETILENTEREFTALATO

ACIDO TEREFTALICO + GLICOLE ETILENICO



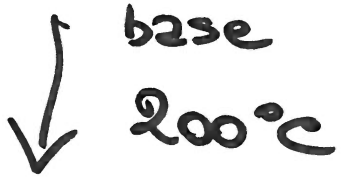

ACIDO TEREFTALICO
+
H+, riscaldando
H2O
n
n
n H2O
PET
MILARD
DRACON

# TRANSESTERIFICAZIONE



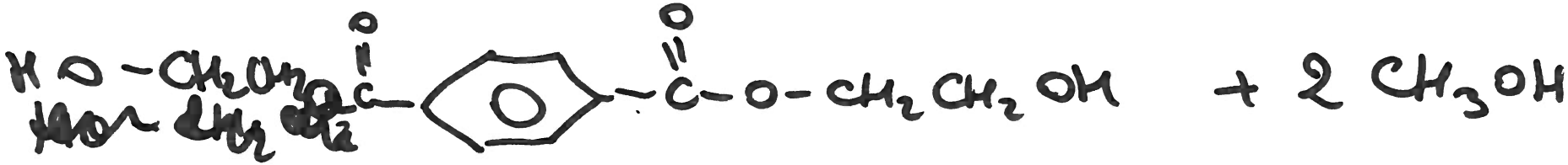
TEREFTALATO METILICO

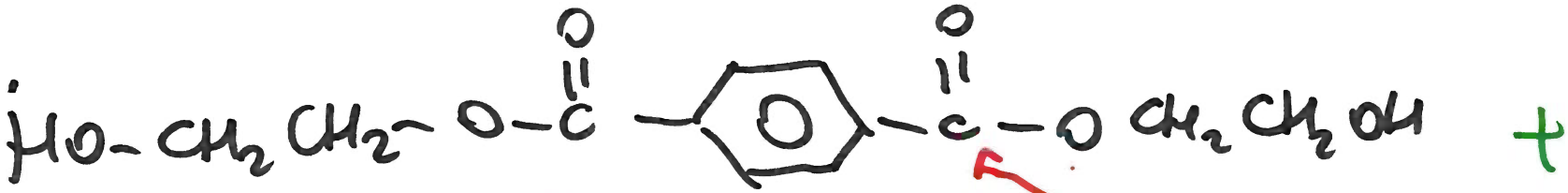


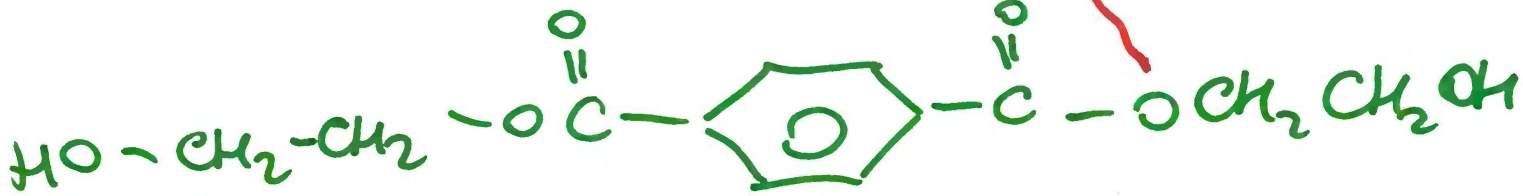


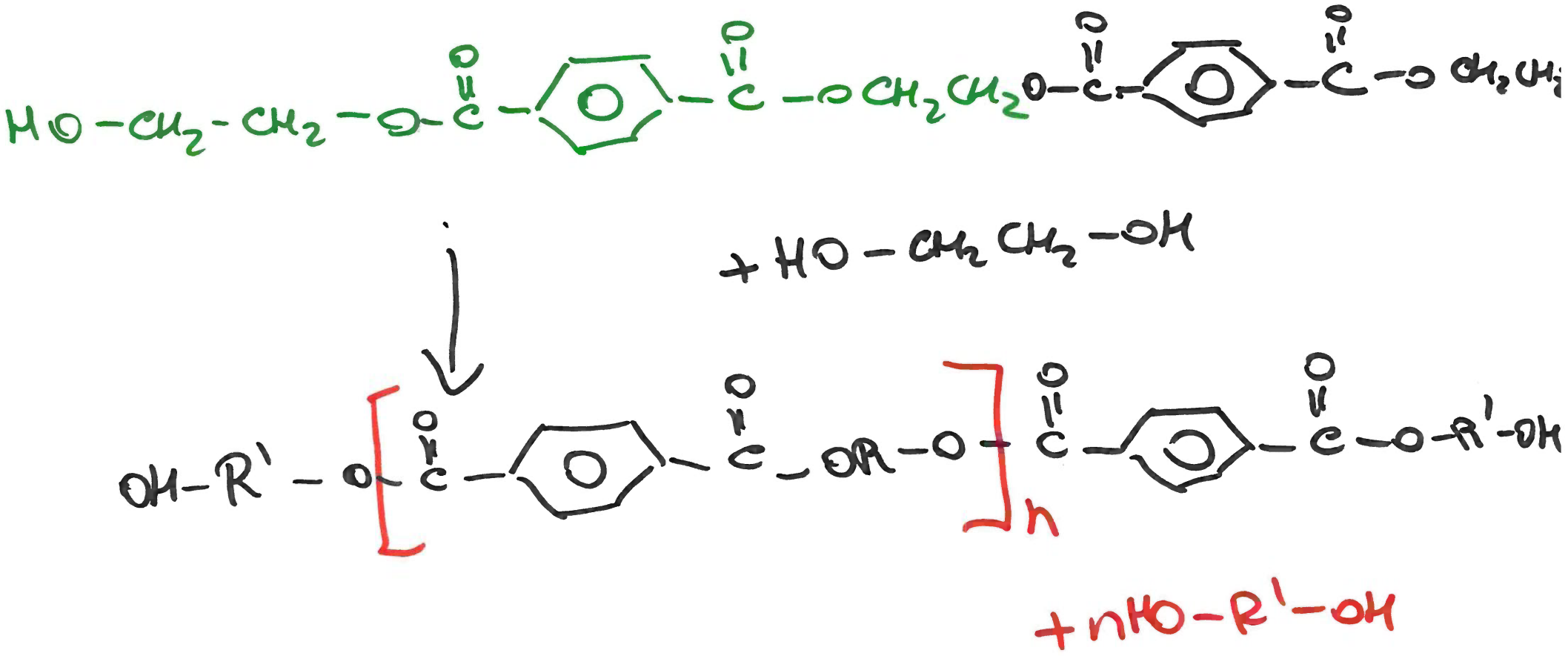
base

200°C

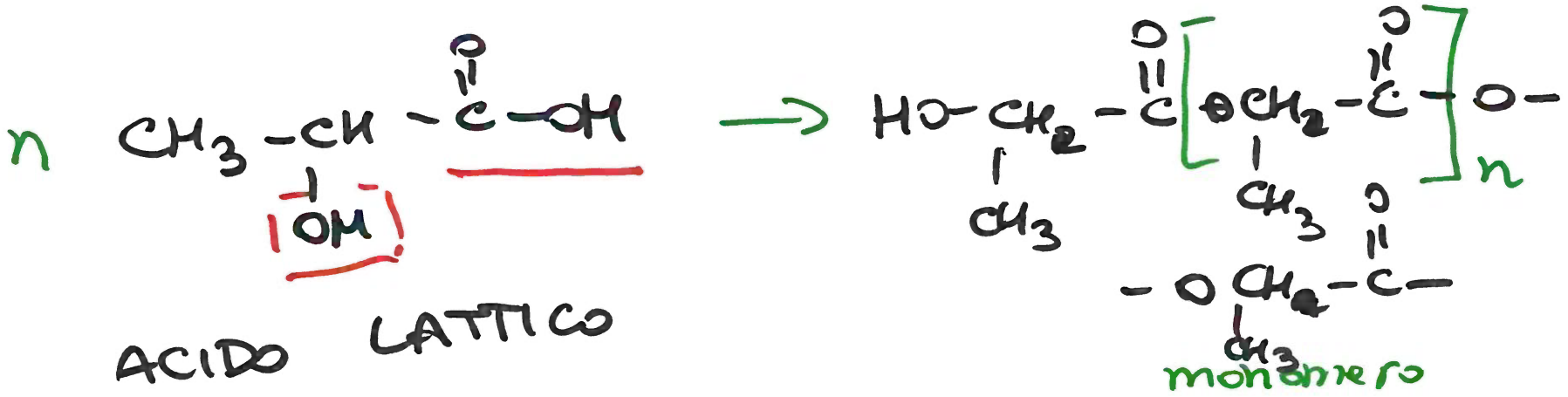






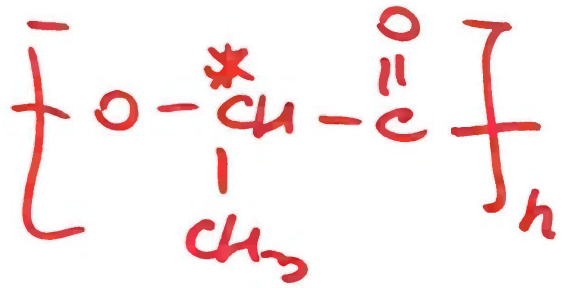

+ HO – CH2 CH2 – OH
OH – R' – O
OR – O
n
+ n HO – R' – OH

# PLA acido POLI LATTICO

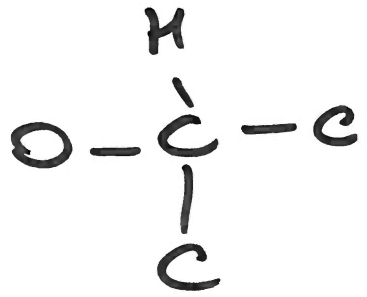



ACIDO LATTICO

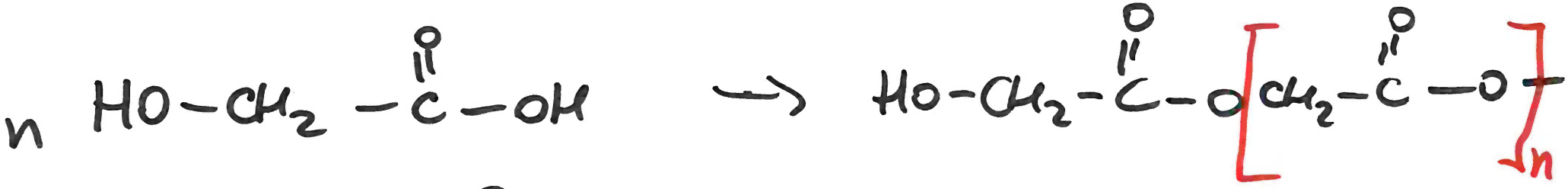
* chirale



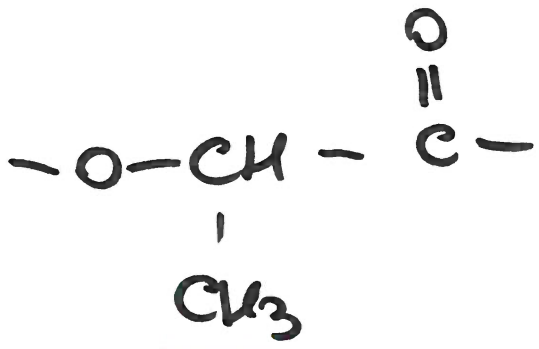
ACIDO POLI LATTICO



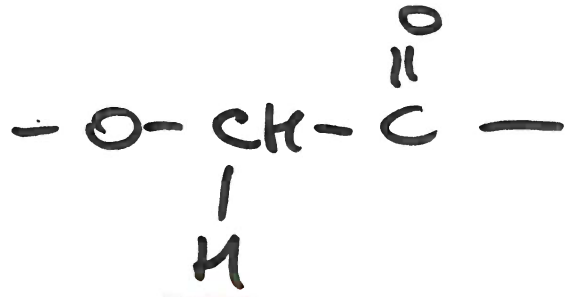
PLGA Acido poliglicolico



ACIDO GLICOLICO



polilattico

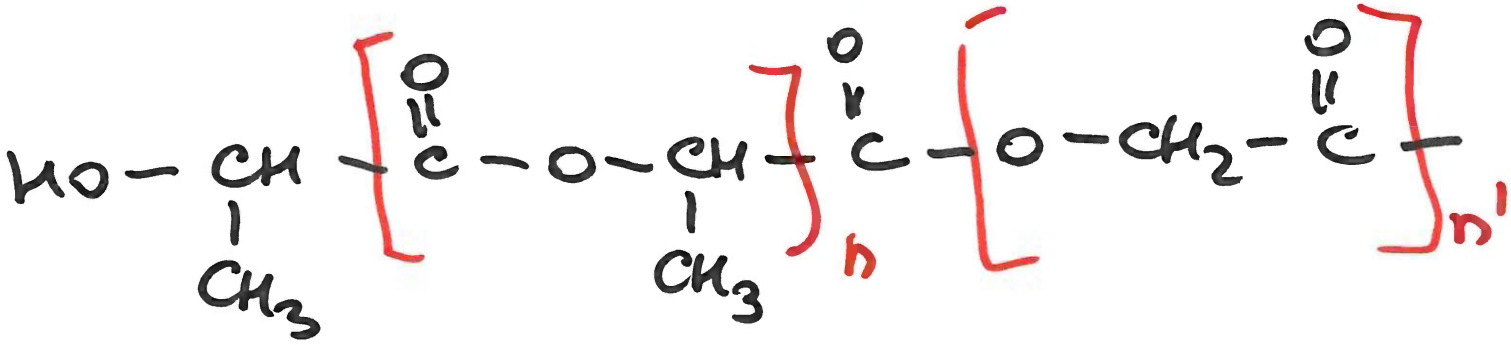


poliglicolico

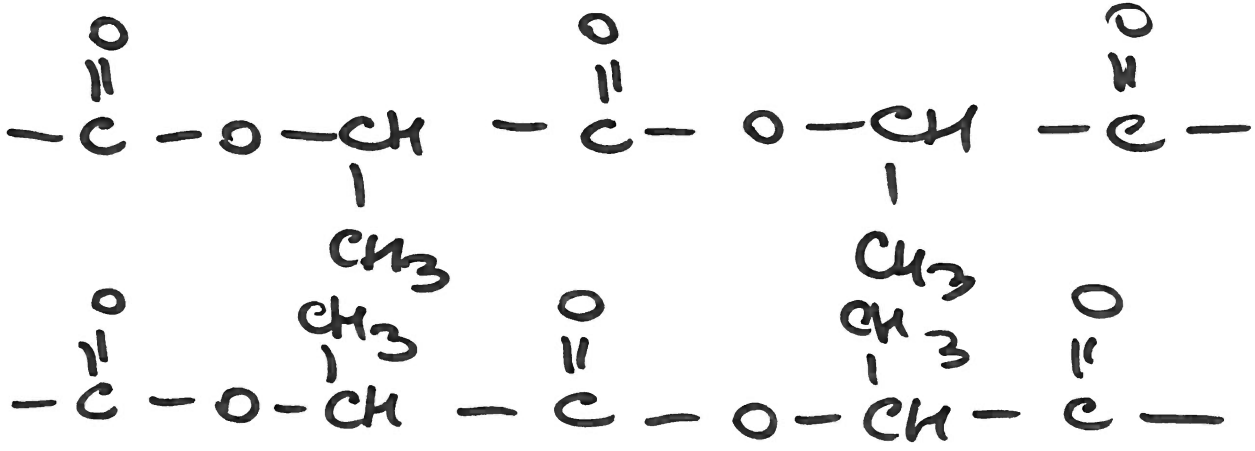
PGA

PGA si degrada più velocemente del PLA

PLGA ácido láctico glicólico



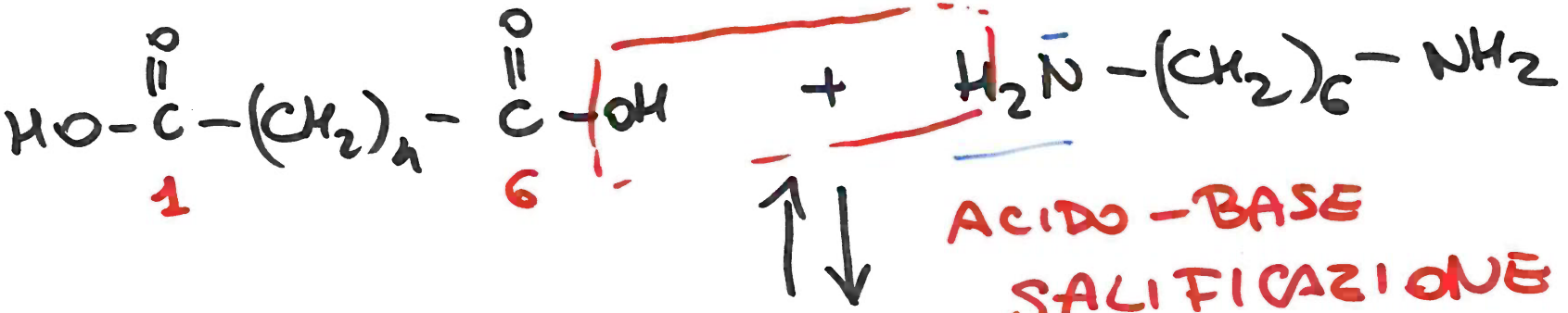
PLGA → L - láctico
D - láctico
L,D - láctico

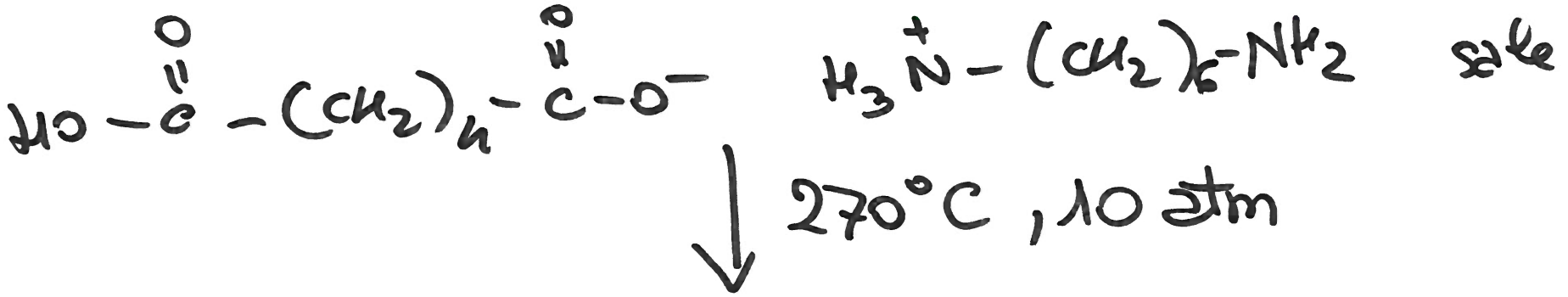


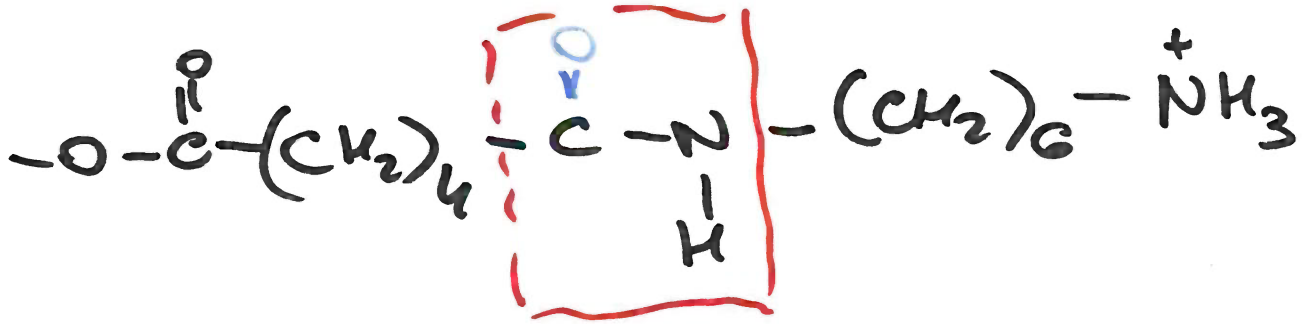
# POLIAMMIDI

- NYLON
  - → NYLON 6,6
  - → NYLON 6

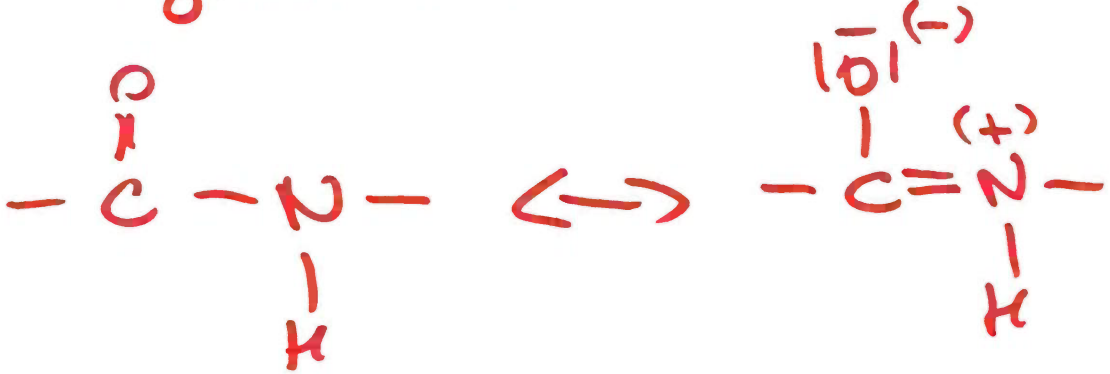
NYLON 6,6: ACIDO ADIPICO + ESAMETILDIAMMINA

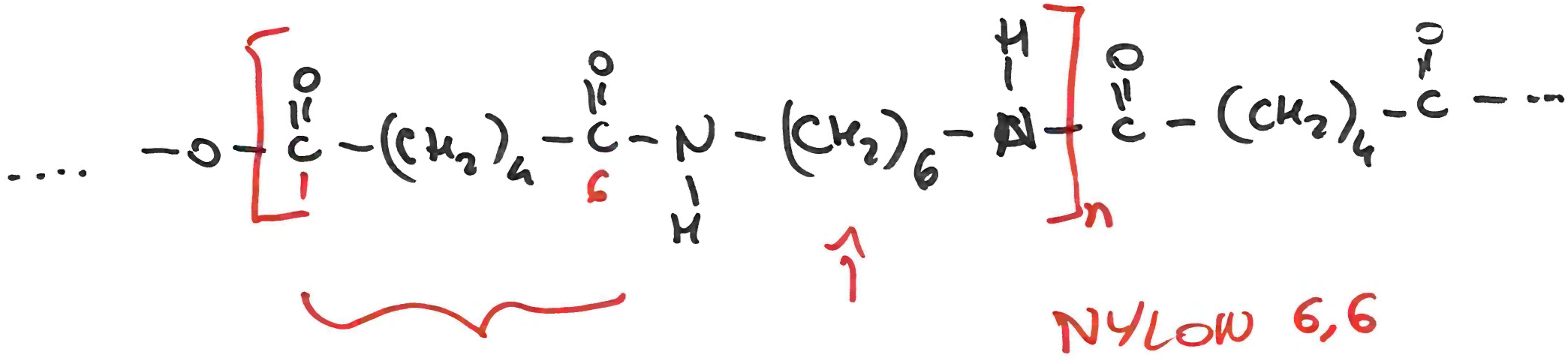




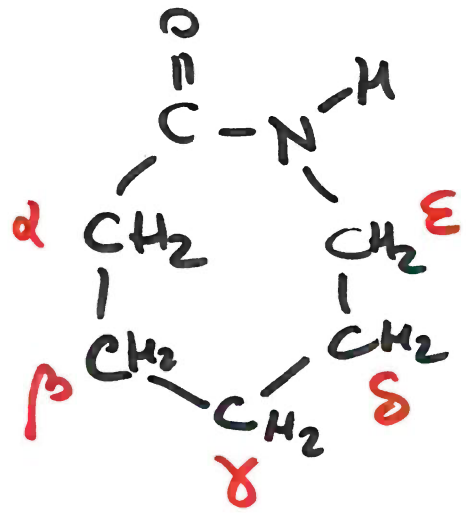
legame ammidico





# NYLON 6

## ε-caprolattame

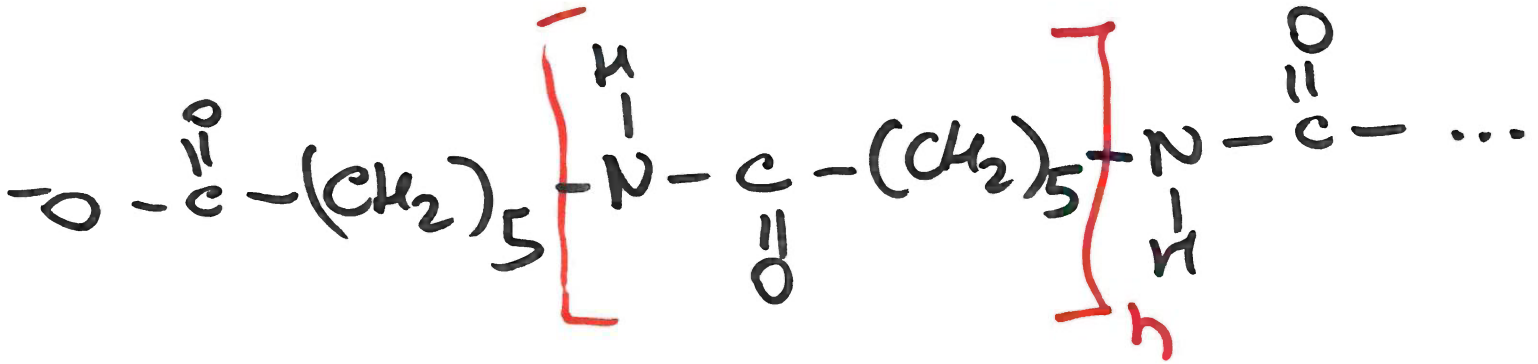



$\xrightarrow{H_2O}$

Acido

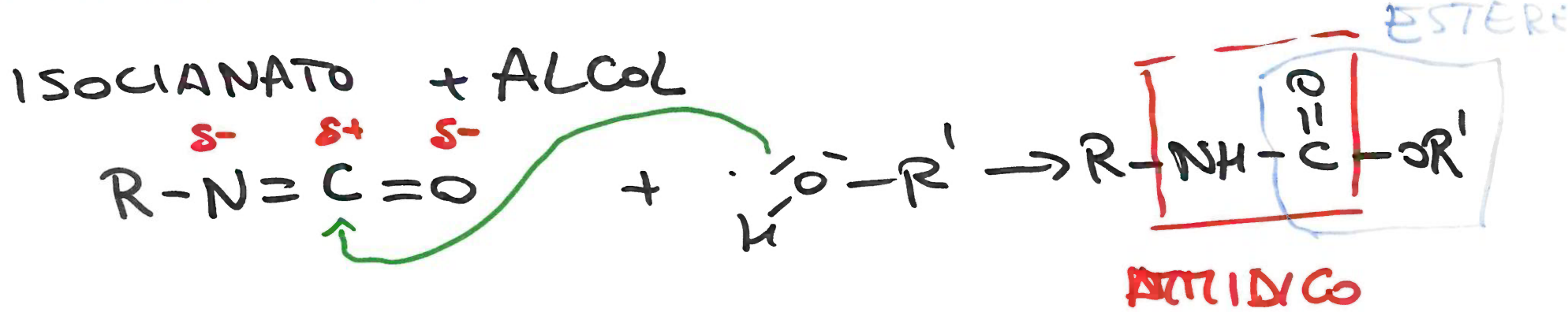
ε-amminocaproico

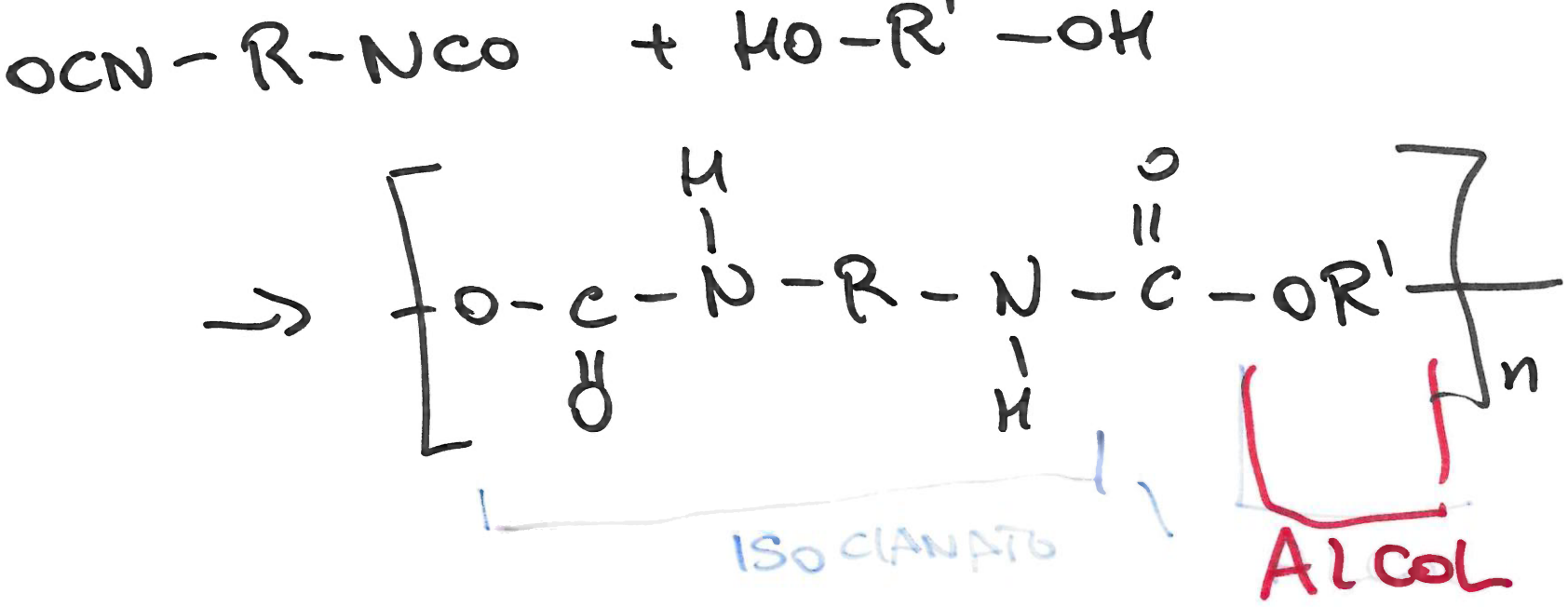
$\xrightarrow[\text{-}H_2O]{250°C}$

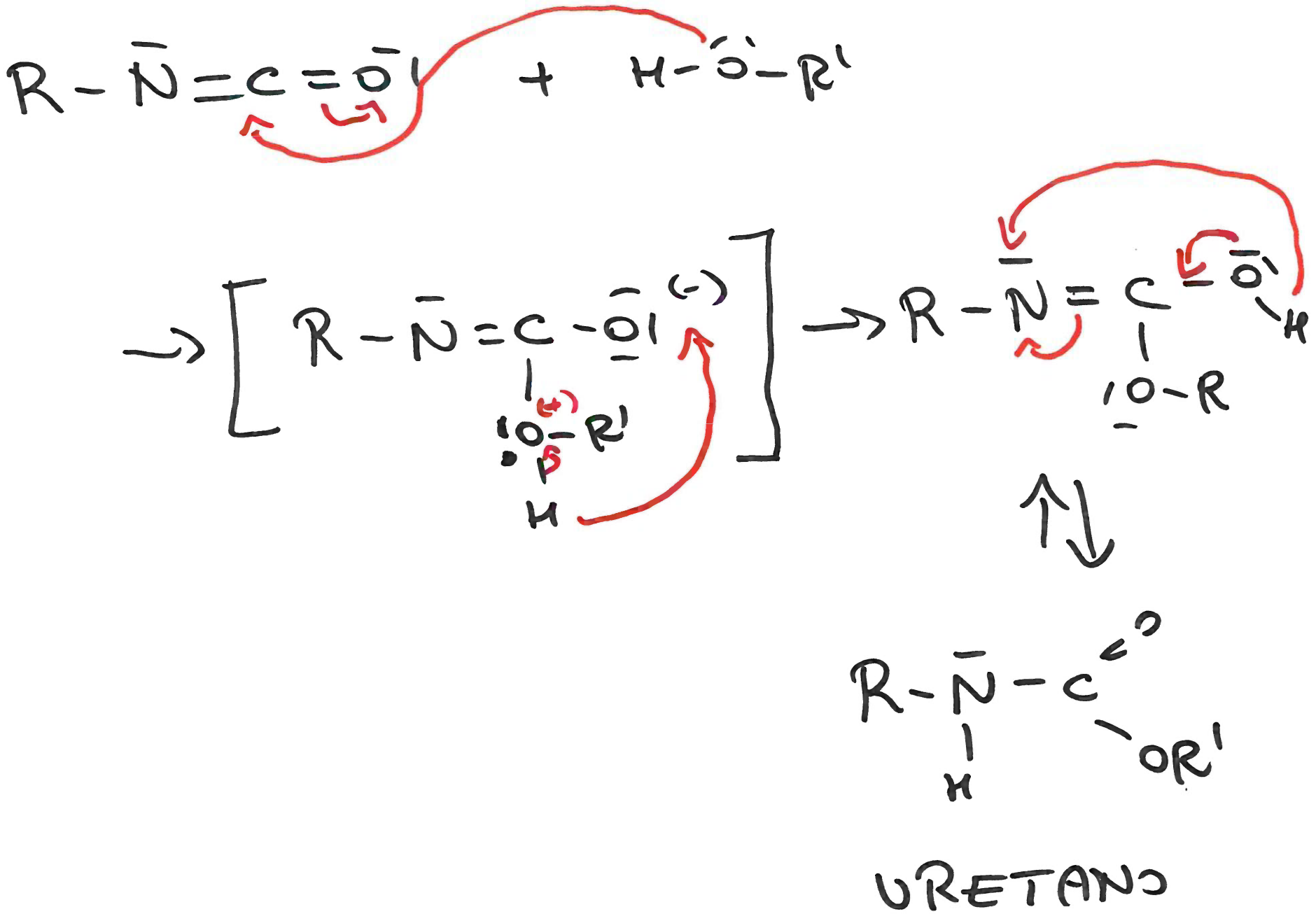


NYLON 6

# POLIURETANI




R - N = C = O
+
H - O - R'
R - N = C - O
O - R'
H
R - N = C
O - R
O
H
R - N - C
H
O
OR'
URETANO

a) $R-N=C=O + H_2O \rightarrow R-NH_2 + CO_2\uparrow$

b) $R'-N=C=O + R-NH_2 \rightarrow R'-NH-\overset{\overset{O}{\|}}{C}-NH-R$

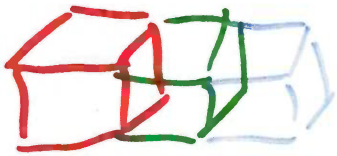
UREA SOSTITUITA

PREPOLIMERO — -OH — PM di 1000 - 2000 Da

+ URETANI

↓

POLIURETANO + $CO_2$



# AMMINE

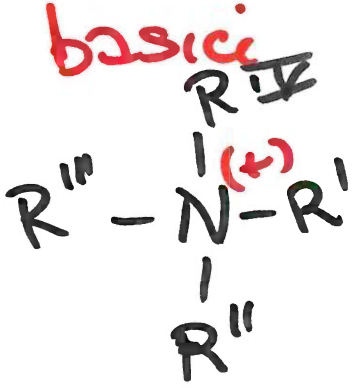
$NH_3$ sostituire un H con un gruppo R

$\ddot{N}H_2R$ ammina primaria

$\ddot{N}HR'R''$ = secondaria

$\ddot{N}R'R''R'''$ = terziaria

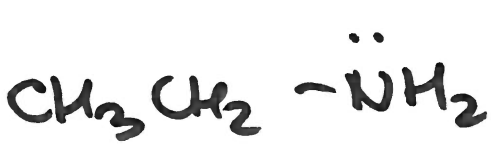
basici



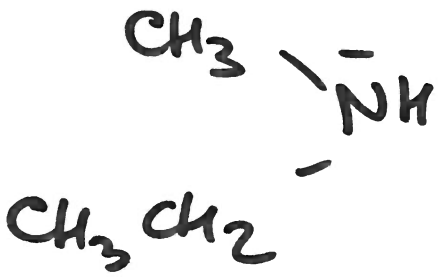
ammina quaternaria

# Nomenclatura

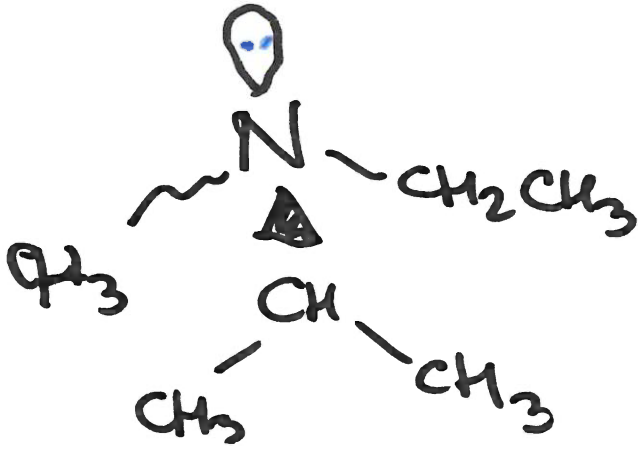
metil amina

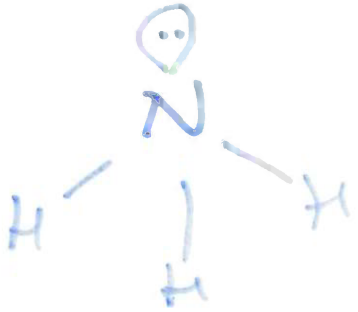


etil amina



Etil metil amina





$AX_3E$

$pK_{b,NH_3} = 4.74$

$pK_{b,\ CH_3NH_2} = 3.36$

$pK_{b,\ (CH_3)_2NH} = 3.28$

$pK_{b,\ (CH_3)_3N} = 4.30$

basicità aumenta

trimetilammina

$$CH_3 \rightarrow \bar{N}H_2 + H^+ \rightleftharpoons CH_3 - \overset{(+)}{N}H_3$$

$NHR'R'' > NH_2R' > NR'R''R''' > NH_3$

+ basica

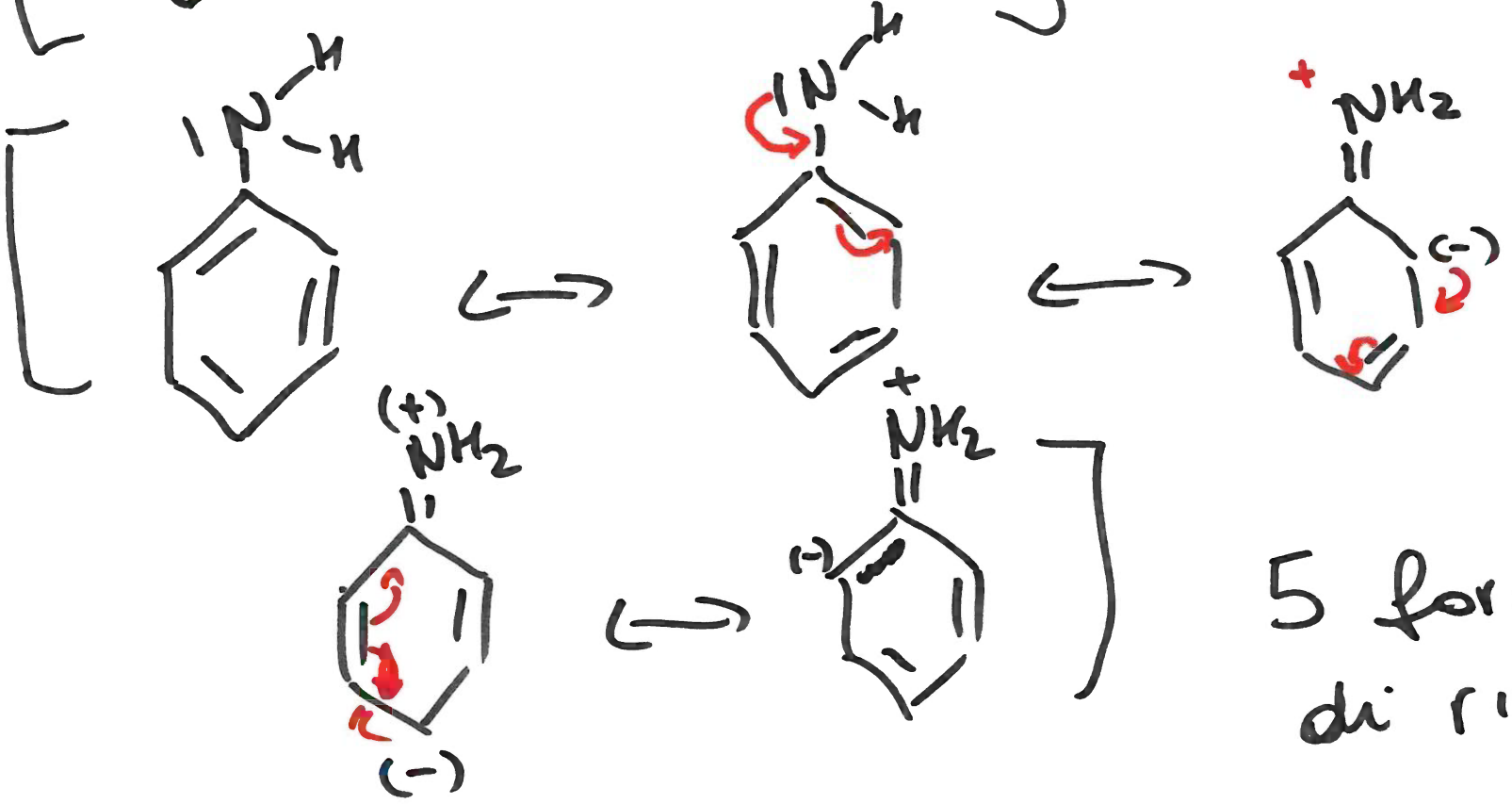
- basica


$pK_b = 3.42$

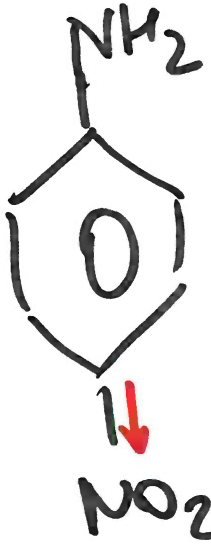
$pK_a = 14 - pK_b = 4.58$ $\quad K_a \cong 10^{-5}$


$+ H^+ \longrightarrow$

2 forme di risonanza



5 forme di risonanza

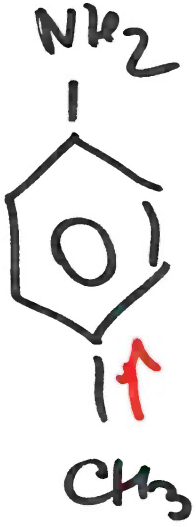



$pK_b = 13$

elettron attrattore

$pK_a = 1$

$K_a \simeq 10^{-1}$




$pK_a = 8.5$

$pK_b = 14 - 8.5$

$\neq 5.1$

elettron donatore

destabilizza anilina