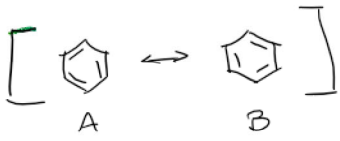
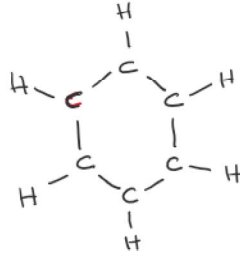
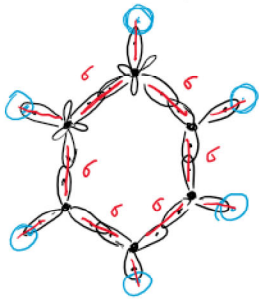


BENZENE

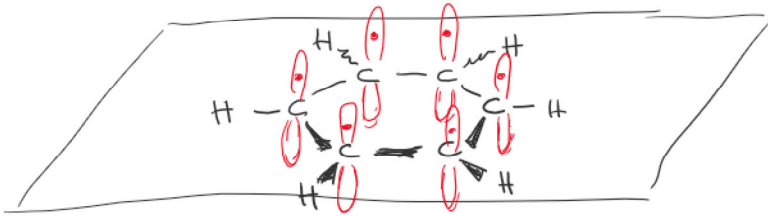


Tutti i C del benzene sono sp^2

3 orbitali ibridi sp^2



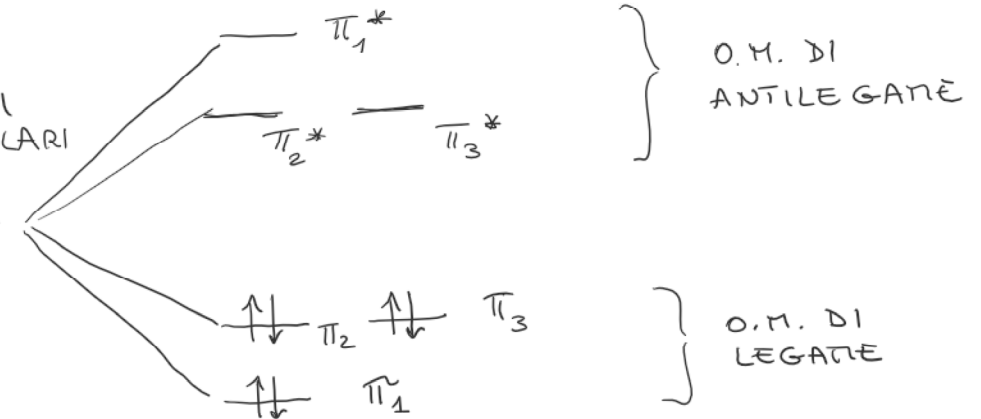
Tutti i leg. σ stanno sul piano del foglio



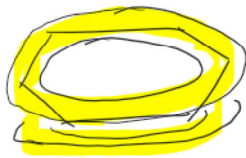
E ↑

TEORIA DEGLI ORBITALI MOLECOLARI

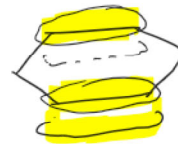
↑ ↑ ↑ ↑ ↑ ↑
6 orbitali p



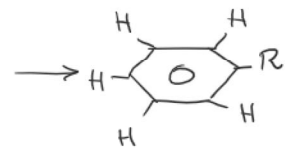
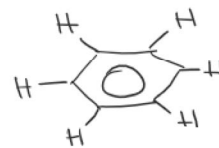
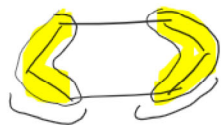
π_1



π_2



π_3



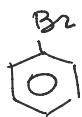
NOMENCLATURA

Benzeni MONOSOSTITUITI

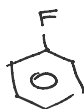
R₁

F

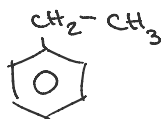
Benzeni MONOSOSTITUITI



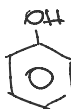
Bromobenzene



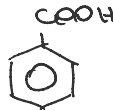
Fluorobenzene



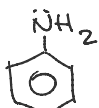
Etilbenzene



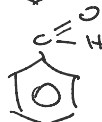
FENOLO



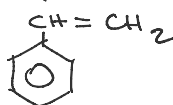
Acido BENZOICO



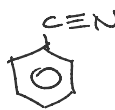
ANILINA



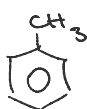
Benzaldeide



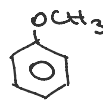
STIRENE



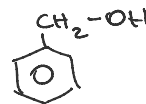
Benzonitrile



TOLUENE

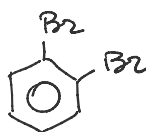


Anisolo

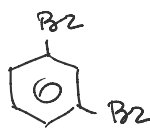


Alcool BENZILICO

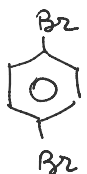
Benzeni DISOSTITUITI



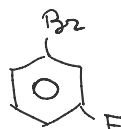
1,2-Dibromobenzene
ortho -
o -



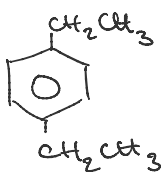
1,3-Dibromobenzene
meta -
m -



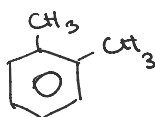
1,4-Dibromobenzene
para -
p -



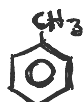
m-bromofluorobenzene



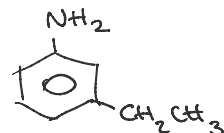
p-diethylbenzene



o-Xilene



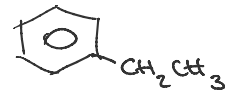
p-bromotoluene



m-ethylamine

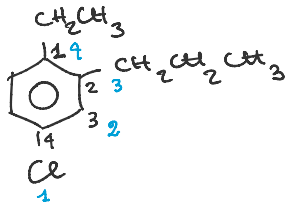


p-bromotoluene



m-ethylamine

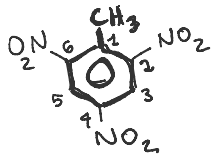
Benzene POLI SOSTITUITI



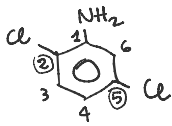
1,2,4
1,3,4

4-cloro-1-et-il-2-pro-pil benzene

-NO₂ gruppo NITRO



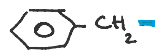
2,4,6-Trinitro toluene (TNT)



2,5-dicloro amine



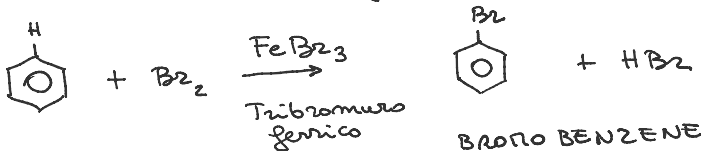
Fenile
gruppo fenilico



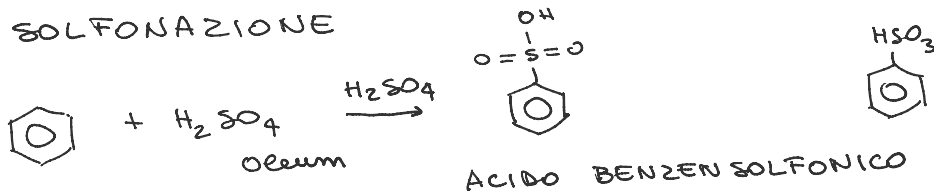
Benzile
gruppo benzilico

SOSTITUZIONI ELETTROFILI AROMATICHE

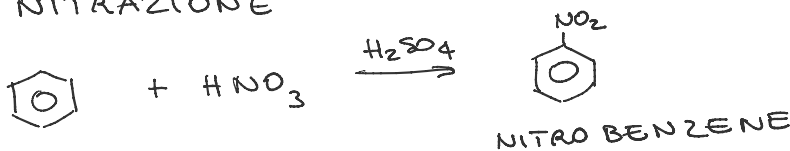
① ALOGENAZIONE (Clorazione o Bromurazione)



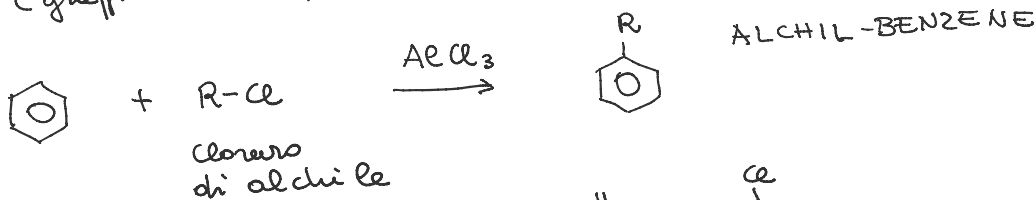
② SOLFONAZIONE




③ NITRAZIONE



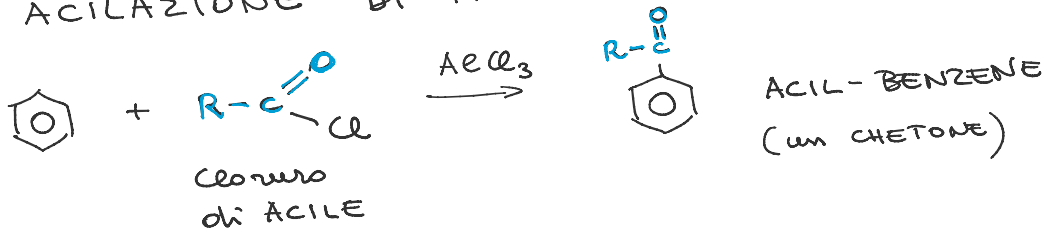
④ ALCHILAZIONE DI FRIEDEL-CRAFTS
(gruppi alchilici)



N.B. Non funziona con o

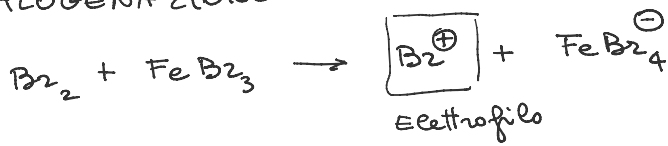
N.B. Nom funzione con ^{carboni} di alchile $\text{H}-\text{C}=\text{C}-\text{H}$ o 

⑤ ACILAZIONE DI FRIEDEL-CRAFTS

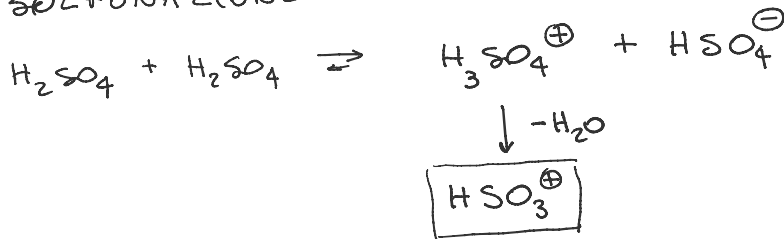


Nel pretestidio delle reazioni si formano gli elettrofili specifici per ciascuna reazione.

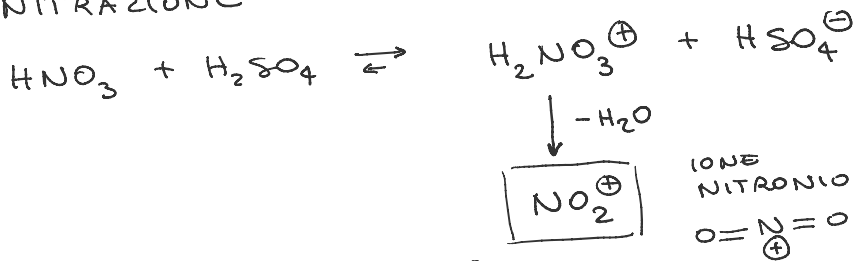
① ALOGENAZIONE



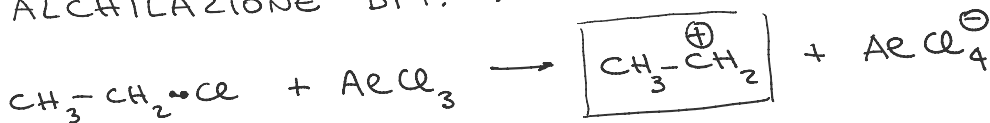
② SOLFONAZIONE



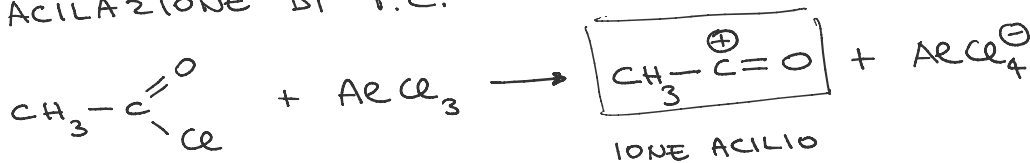
③ NITRAZIONE



④ ALCHILAZIONE DI F.-C.



⑤ ACILAZIONE DI F.C.



Cloruro di acetile

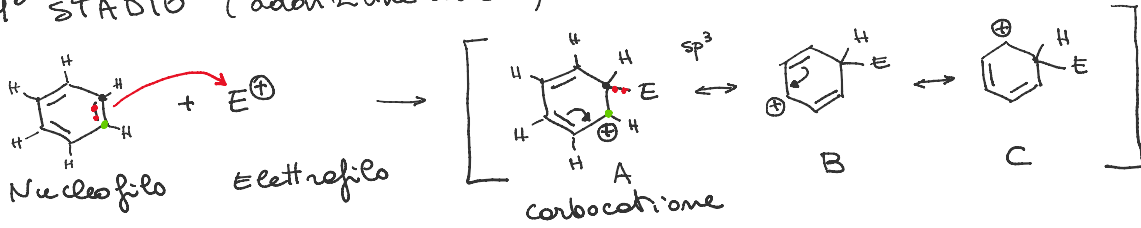
Tutti gli elettrofili nei riquadri vengono indicati da E^{\oplus}

MECCANISMO BISTADIO

... + A)

MECCANISMO BISTADIO

1° STADIO (aggiunzione di E^{\oplus})



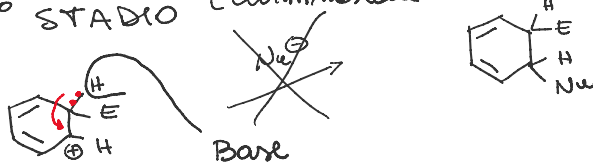
AROMATICO

INTERMEDIO DI REAZIONE
(Intermedio di Wheland)

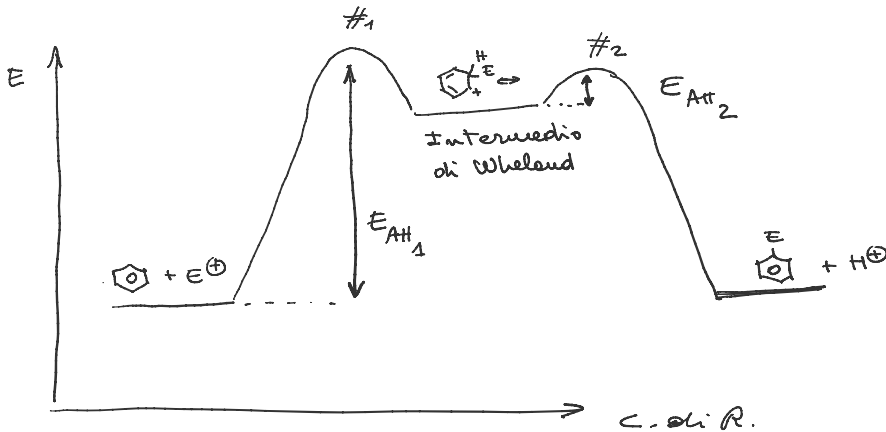
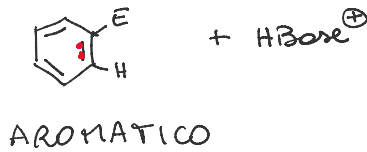
STABILIZZATO PER RISONANZA
MA NON AROMATICO

(ciclico ma non planare)

2° STADIO (eliminazione di H^{\oplus})

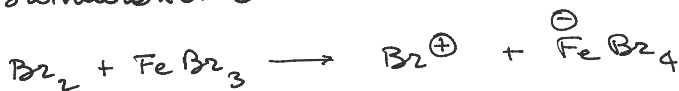


Prodotto di Addizione
NON È AROMATICO

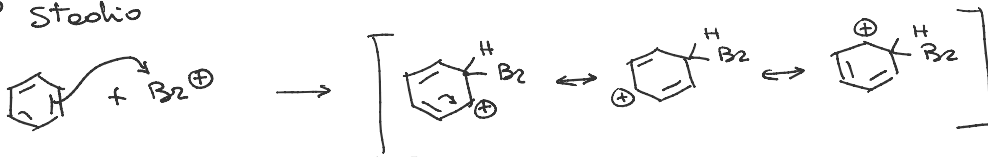


Il primo stadio è lo stadio determinante per l'intero cinetico

Bromurazione



1° stadio



2° stadio



2° stadio

