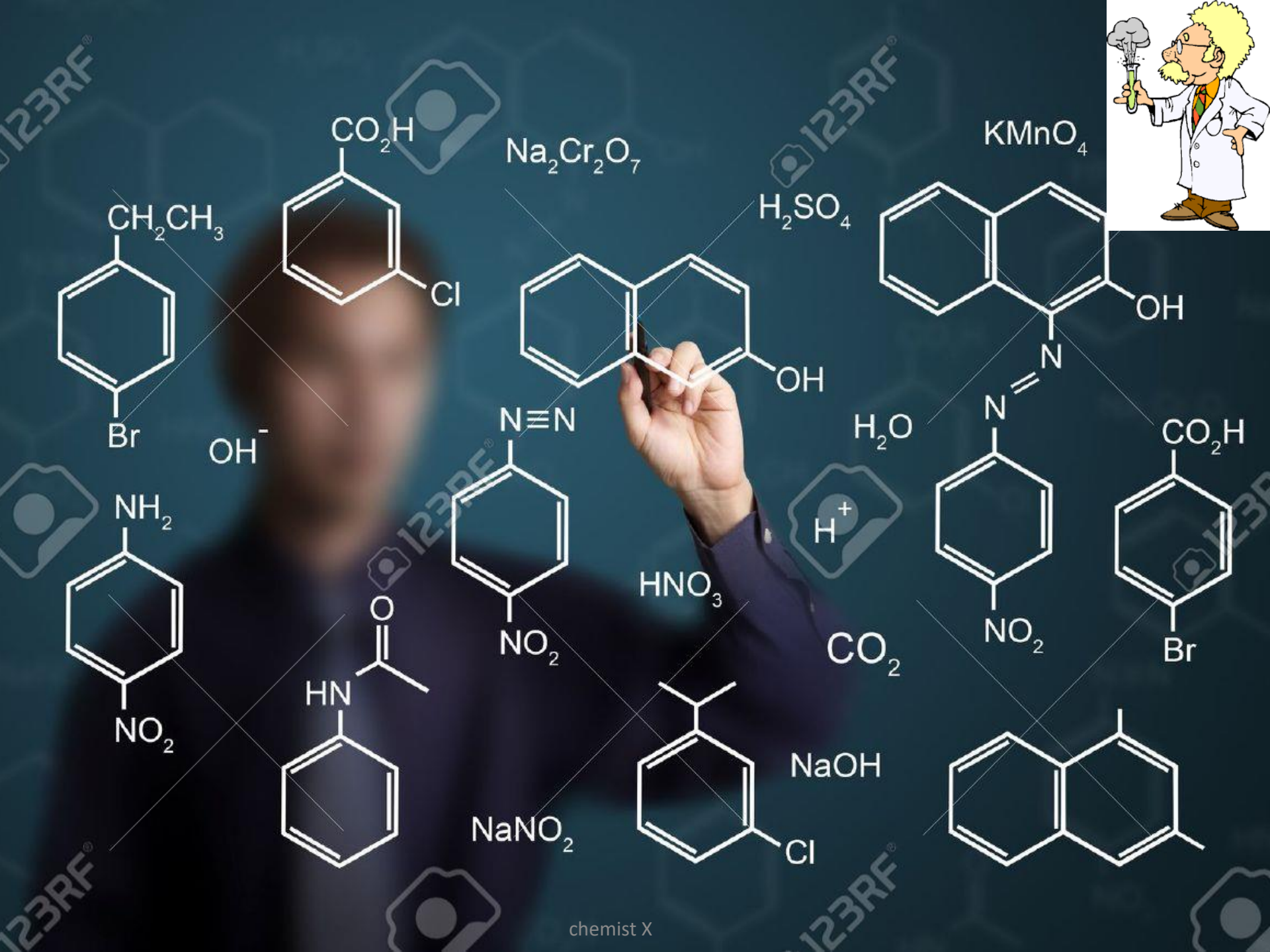
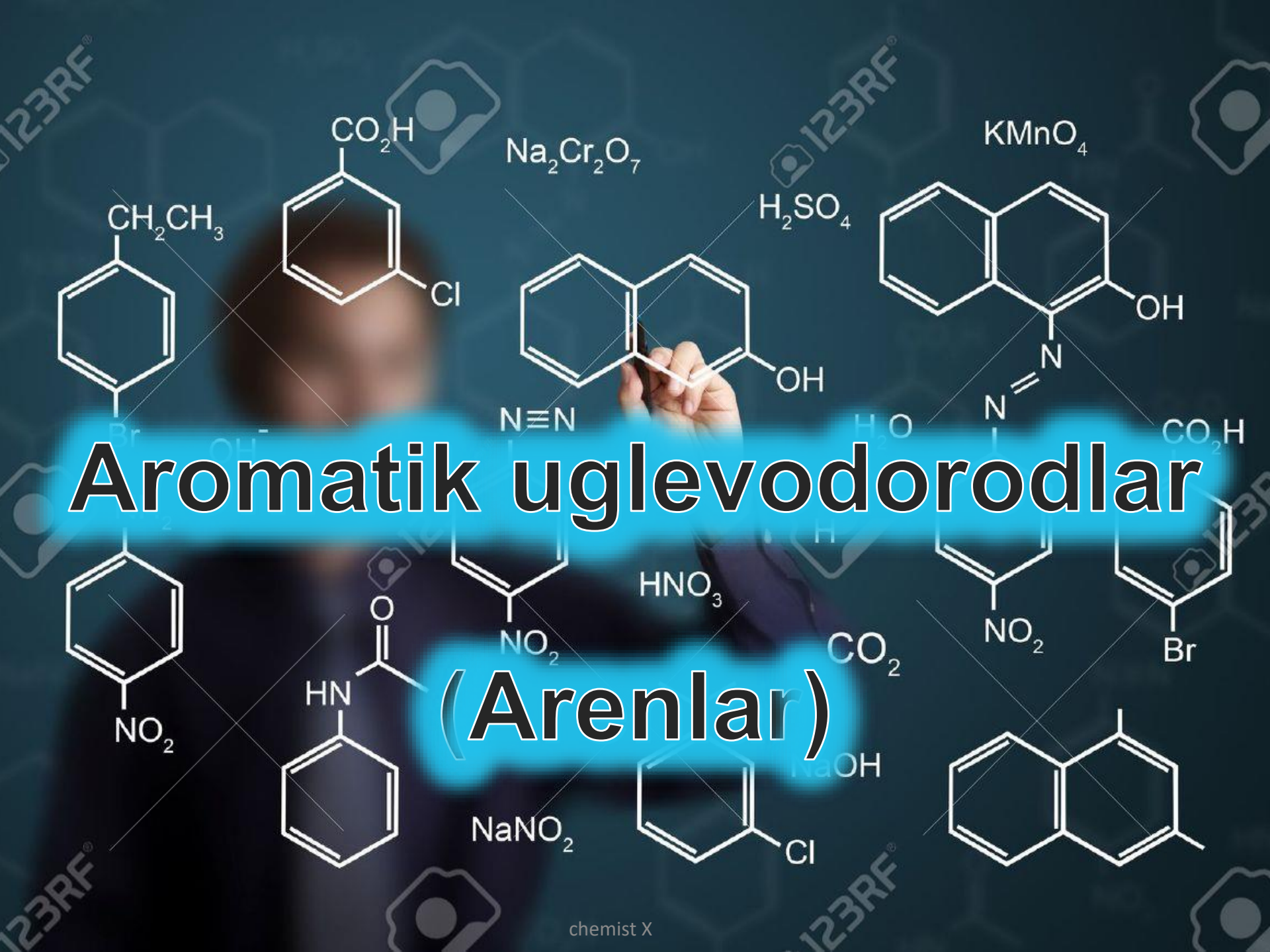

CO2H
Na2Cr2O7
KMnO4
CH2CH3
H2SO4
Cl
OH
Br
OH-
N≡N
H2O
N
N
CO2H
NH2
H+
HNO3
NO2
NO2
Br
O
HN
CO2
NaOH
NaNO2
Cl

chemist X



Aromatik uglevodorodlar

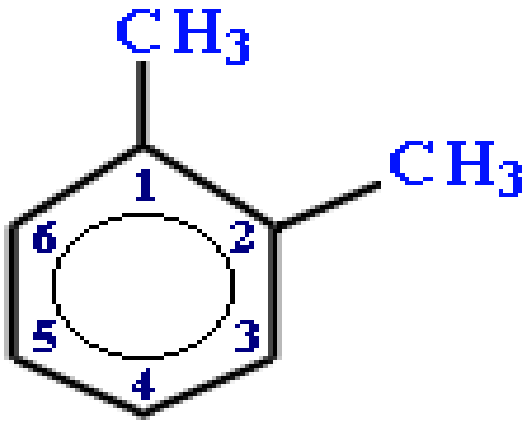
(Arenlar)

Umumiy formulasi

chemist

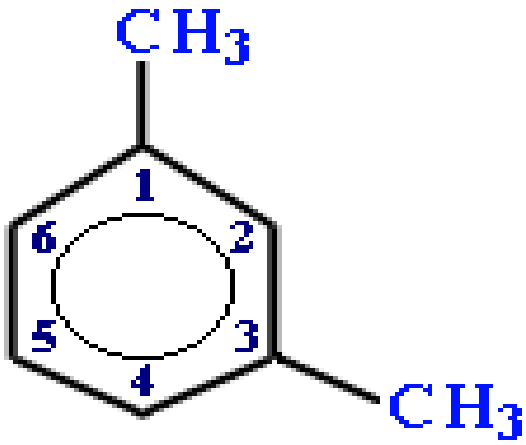
C_nH_{2n-6}

1,2-Диметилбензол



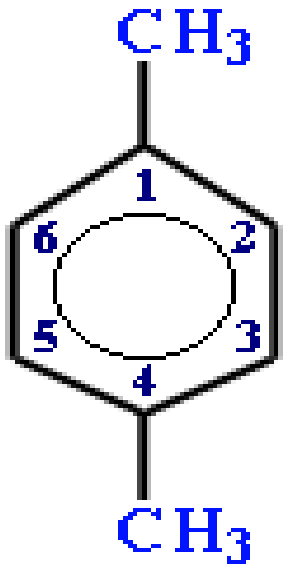
***орто*-ксилол**
(*о*-ксилол)

1,3-Диметилбензол

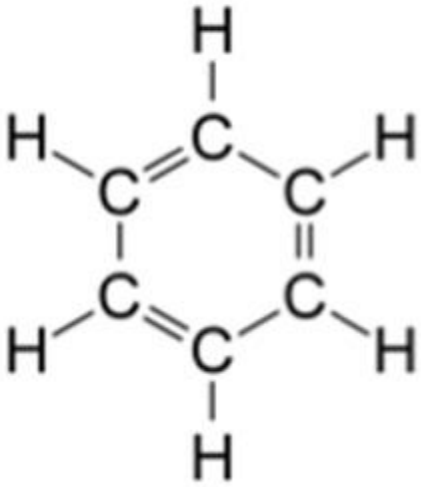


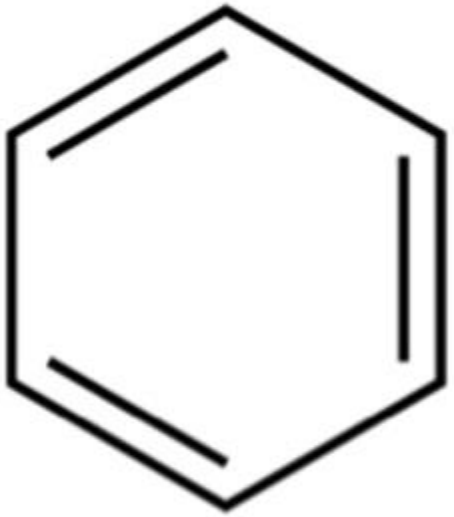
***мета*-ксилол**
(*м*-ксилол)

1,4-Диметилбензол

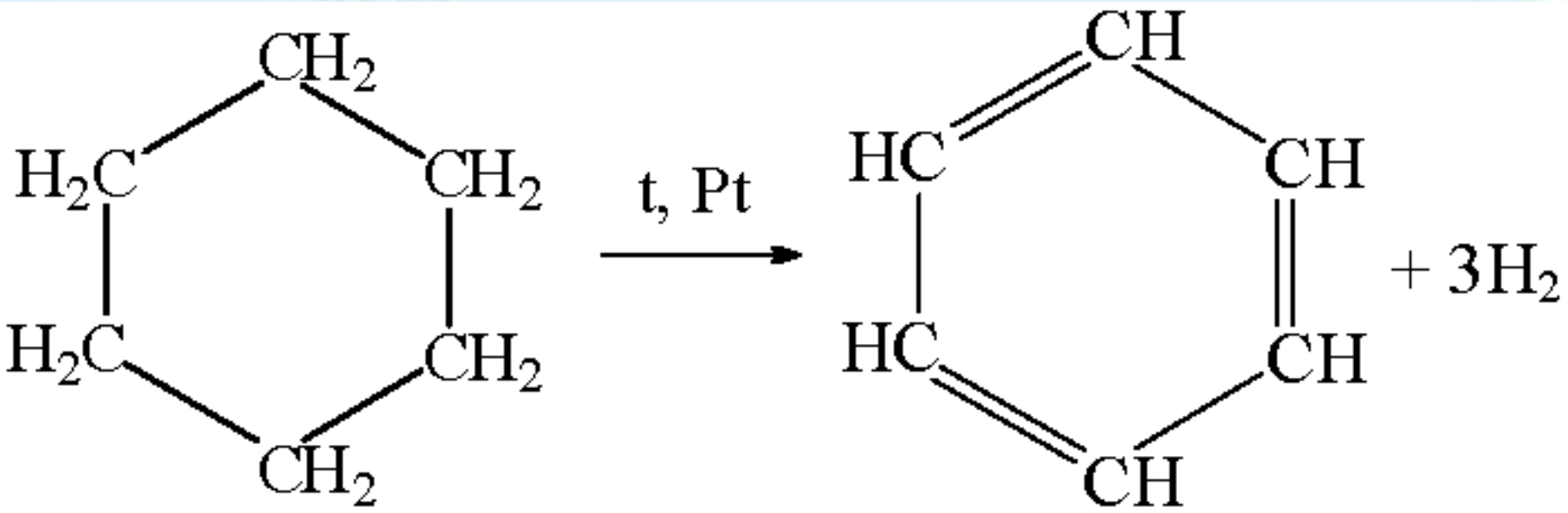


***пара*-ксилол**
(*п*-ксилол)

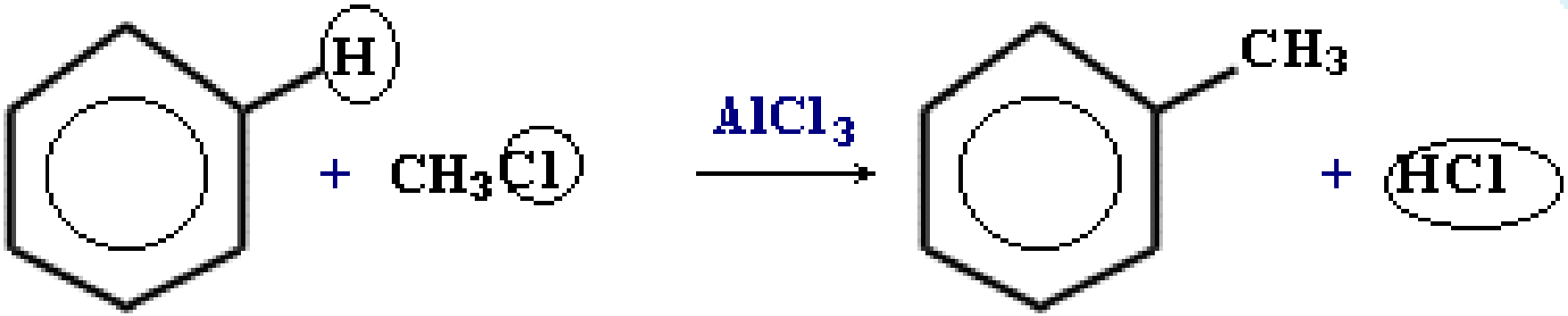




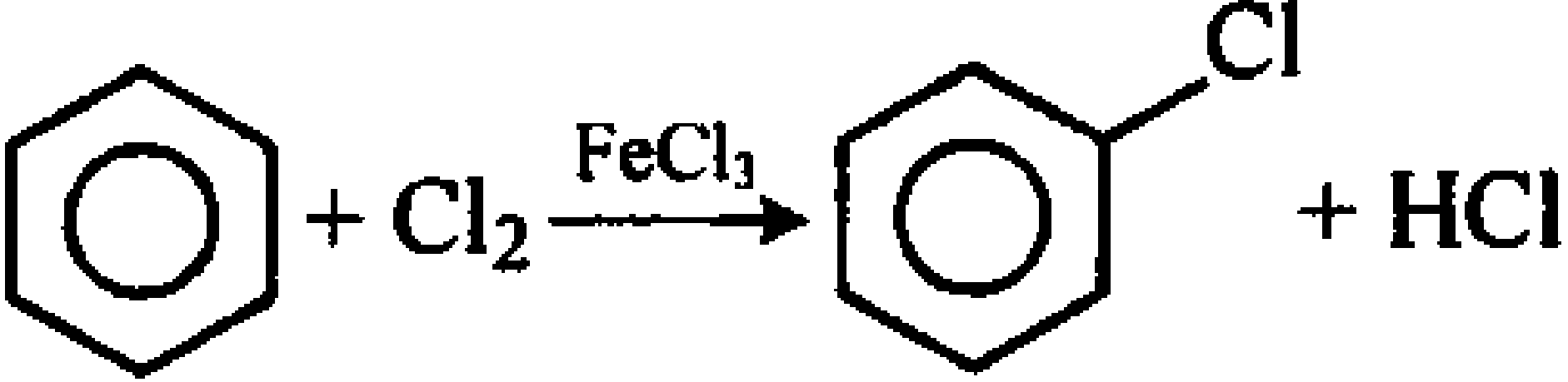
BENZOL

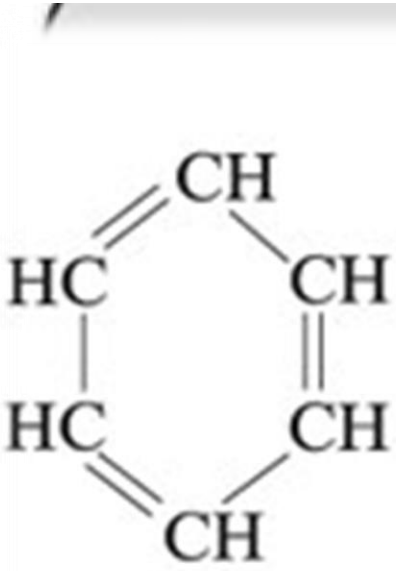


ацетилен (3 шт) **бензол**



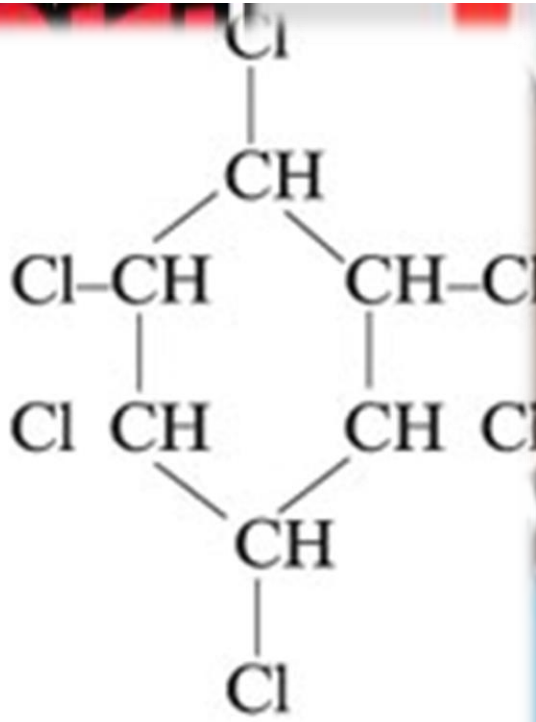
бензол **метилбензол = толуол**





бензол

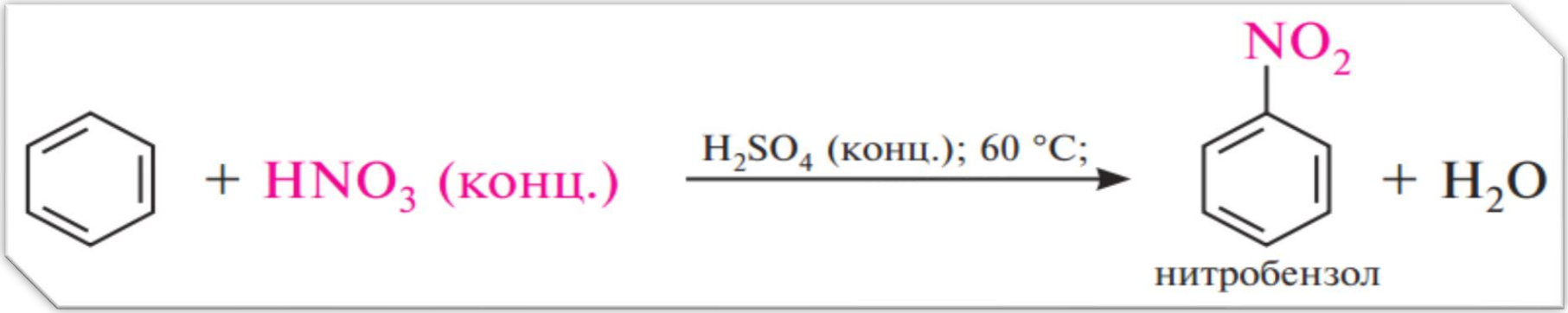
+ $3Cl_2$ ⟶

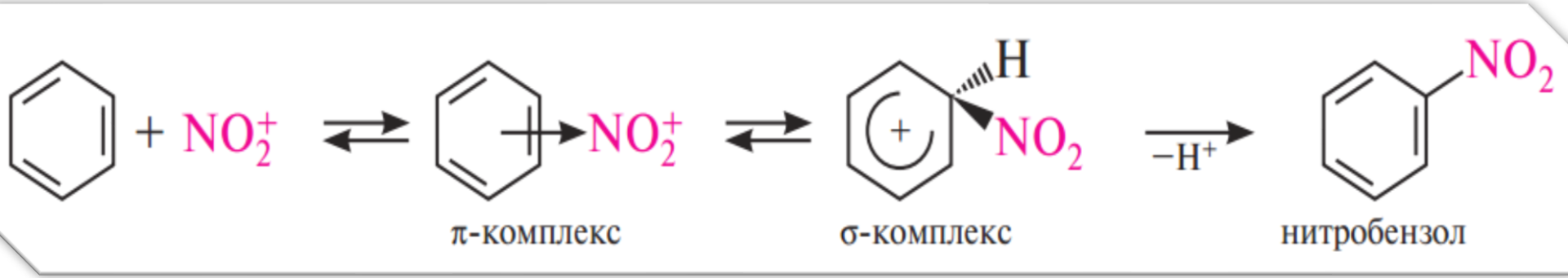


гексахлорциклогексан
(гексахлоран)

Kimyoviy xossaslari.

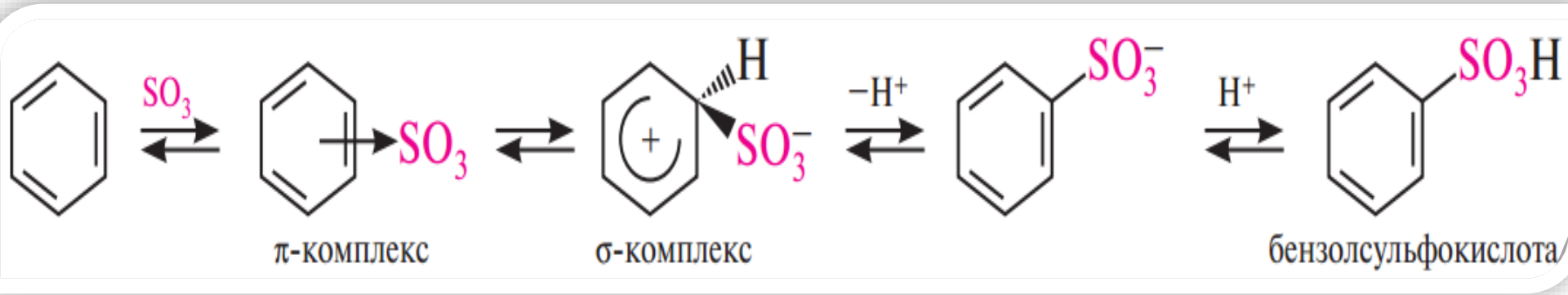
- Benzolga konsentrlangan sulfat kislota ishtirokida nitrat kislota ta’sir ettirilsa nitrobenzol hosil bo‘ladi. (Reaksiya qizdirish bilan boradi)



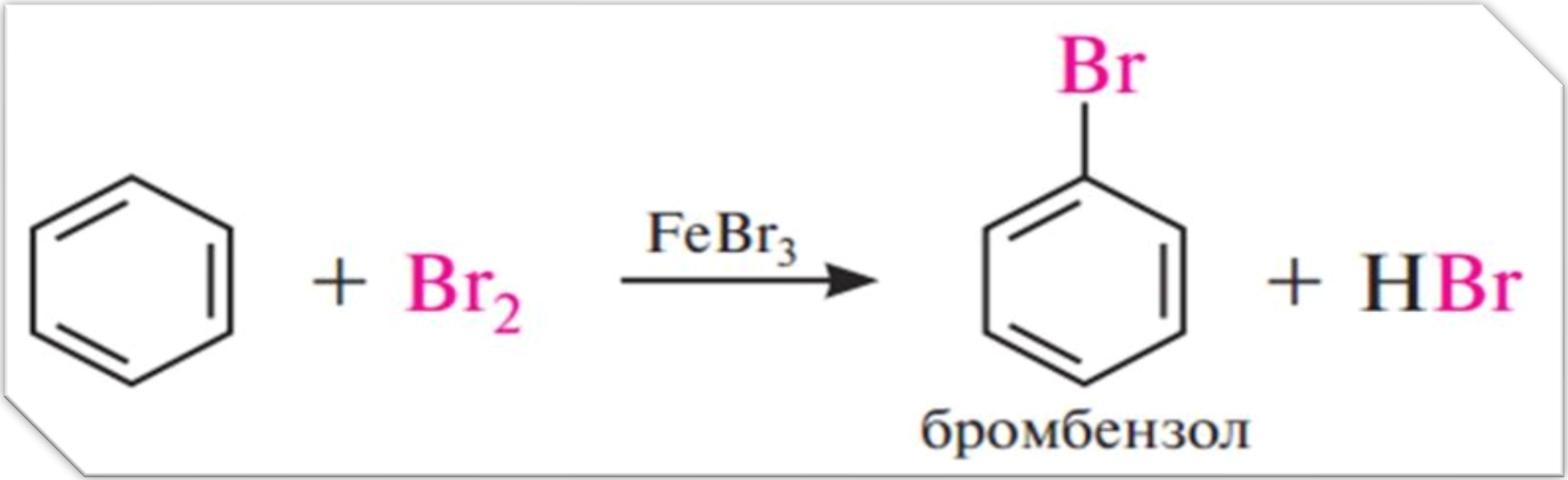


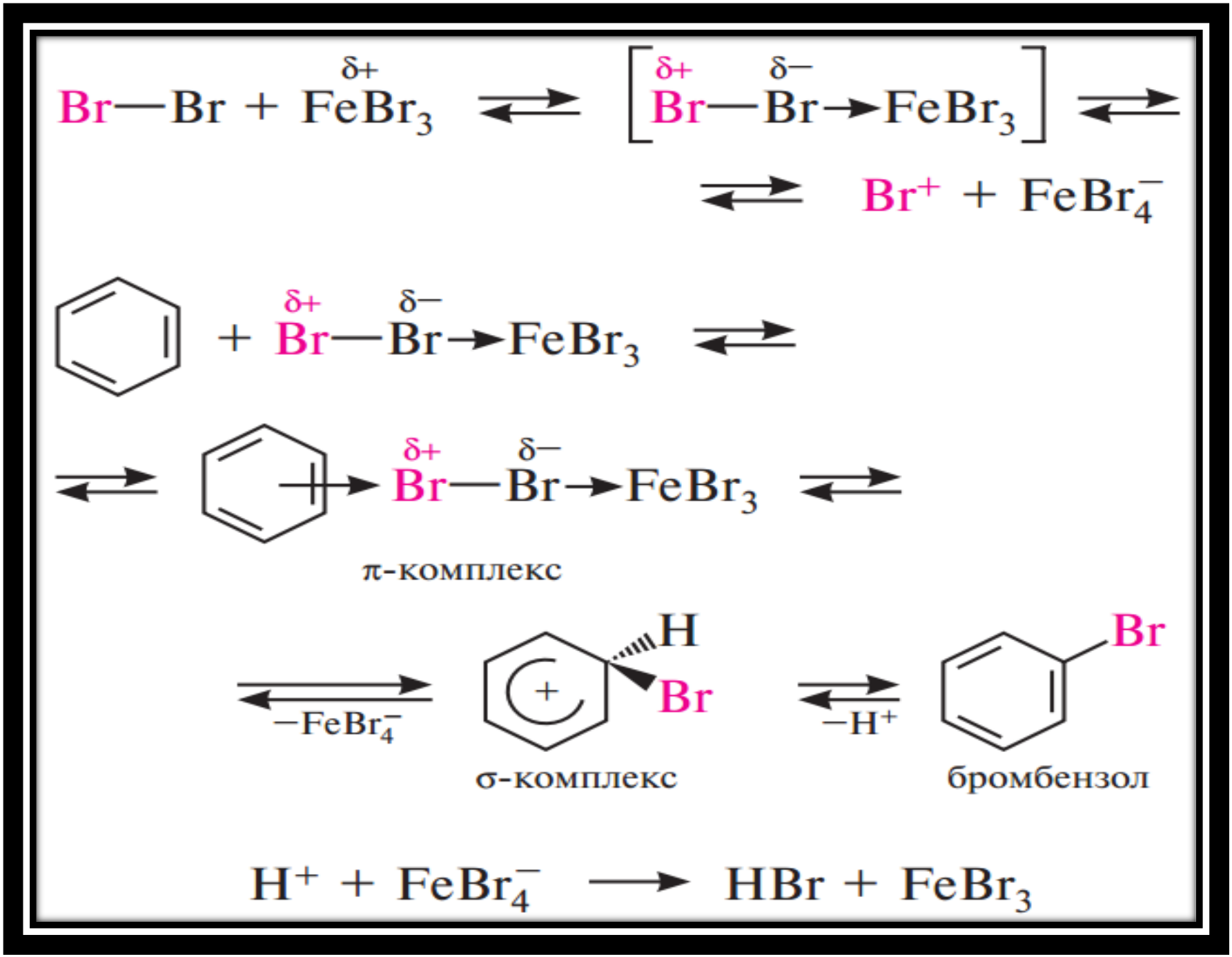
Almashinish reaksiyalari

- Sulfolanish reaksiyasi: oleum ta’sirida yoki konsentrlangan sulfat kislotasi ishtirokida boradi

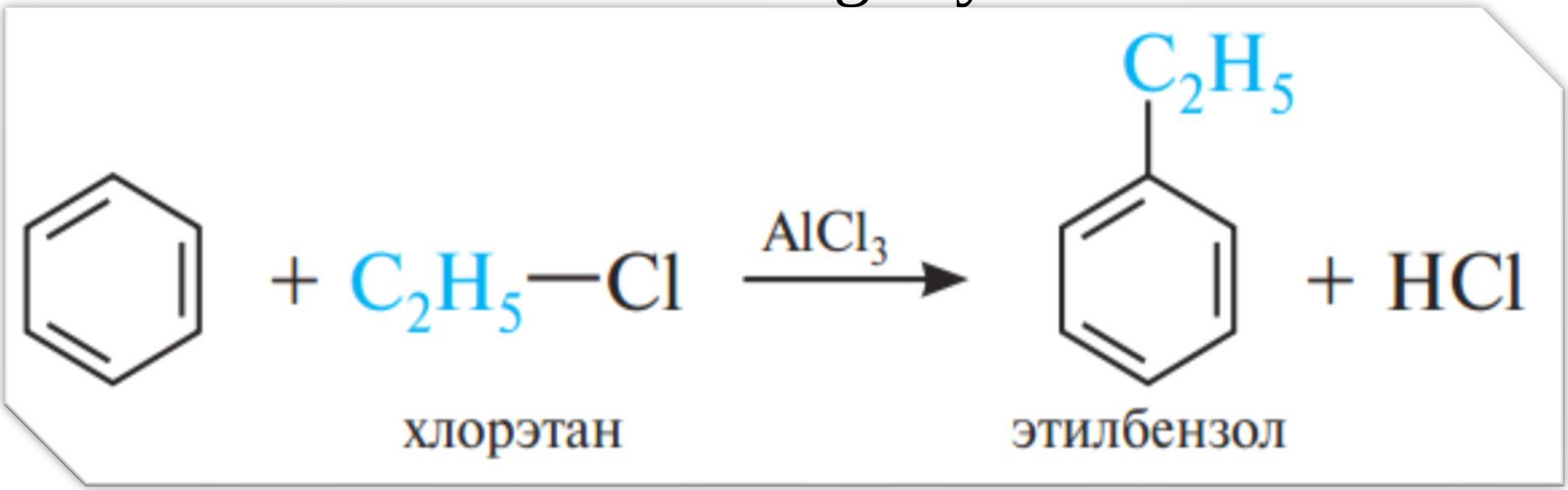


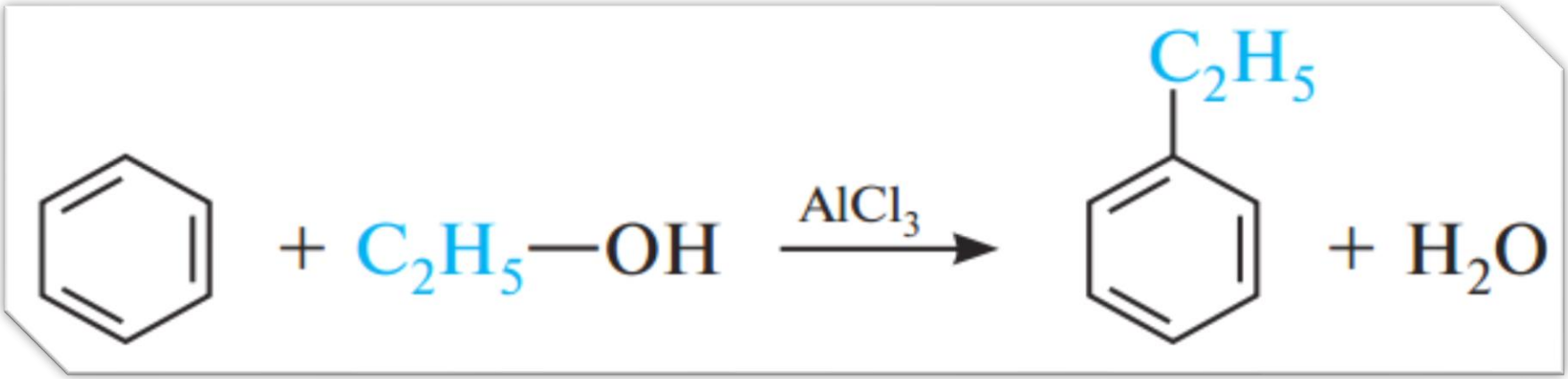
• ***Galogenlash reaksiyasi***: Benzol halqasidagi vodorod atomini galogenlarga almashish reaksiyasi erkin xlor va Lyuis kislotalari (AlCl3, FeBr3, ZnCl2 и др.) ta’sirida boradi.

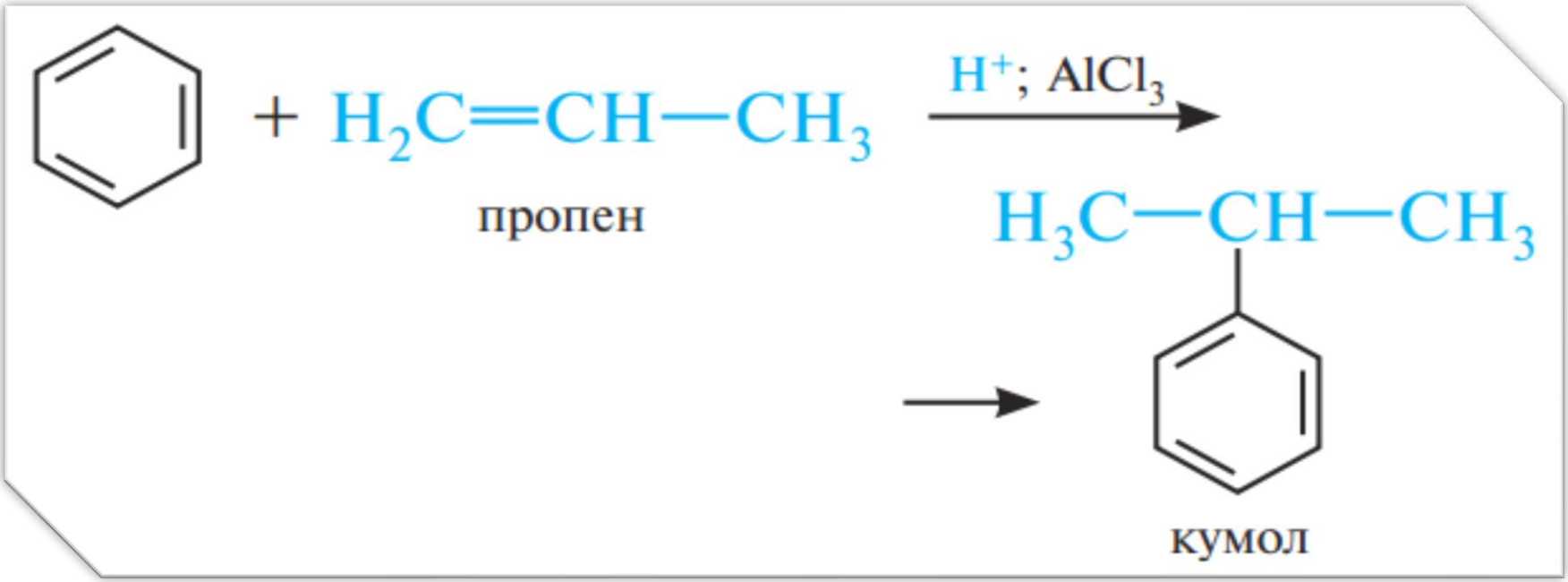


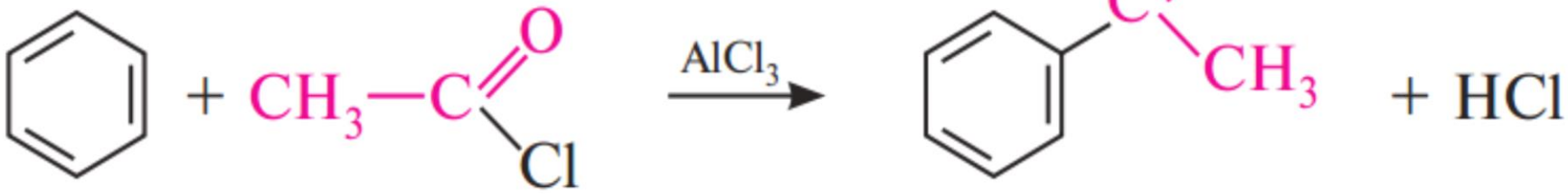

Br—Br + FeBr3
δ+
[Br—Br→FeBr3]
Br+ + FeBr4−
δ−
π-комплекс
H
Br
−FeBr4−
σ-комплекс
−H+
бромбензол
H+ + FeBr4− → HBr + FeBr3

- Fridel-Krafts usuli bilan alkillash reaksiyasi: Arenlarning galogenalkanlar, spirtlar va alkenlar bilan reaksiyasi Lyuis kislotalari katalizatorligi ta’sirida boradi
- Frdel-Krafts usuli bo’yicha atsillash reaksiyasi: Atsillash – molekula $R-C(=O)$ gruppani biriktirib olishiga aytiladi




C2H5
+ C2H5—OH
AlCl3
+ H2O


+ H2C=CH—CH3
H+; AlCl3
пропен
H3C—CH—CH3
кумол

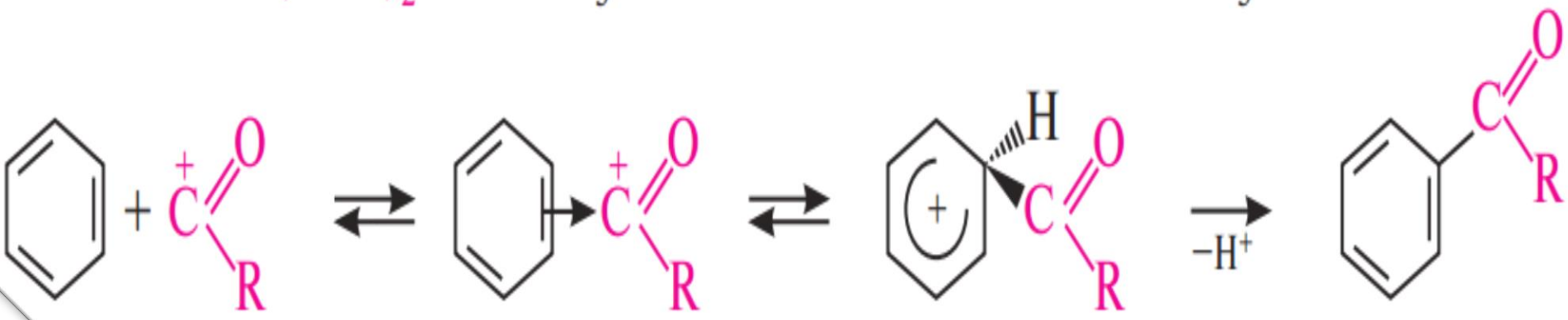


ацетилхлорид

ацетофенон

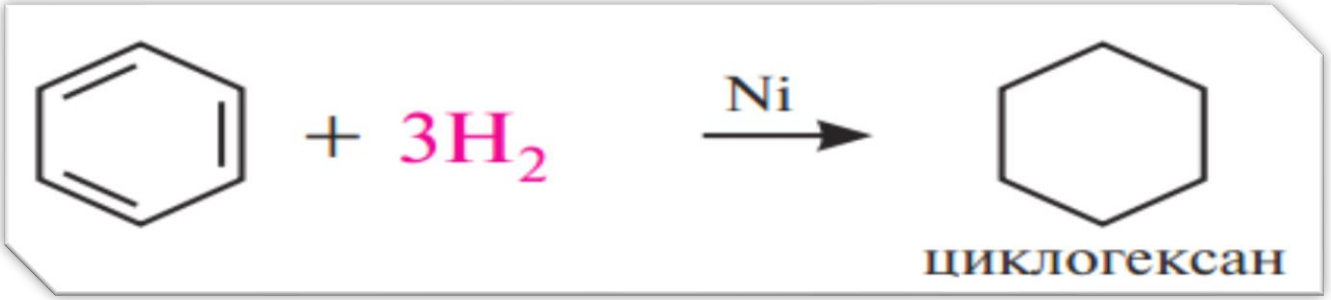
$$RCOCl + AlCl_3 \rightleftharpoons R\overset{+}{C}OAlCl_4^- \rightleftharpoons R-\overset{+}{C}=O + AlCl_4^-$$

$$(RCO)_2O + AlCl_3 \rightleftharpoons R-\overset{+}{C}=O + RCOOAlCl_3^-$$



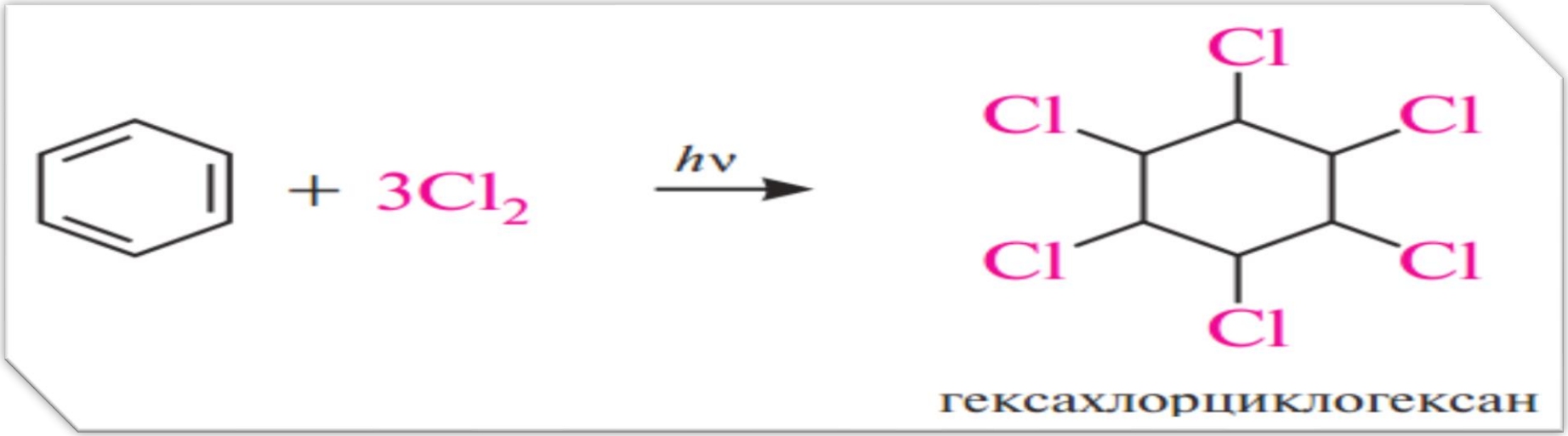
Birikish reaksiyasi:

• Benzol gidrogenlanganda siklogeksanni hosil



qiladi:

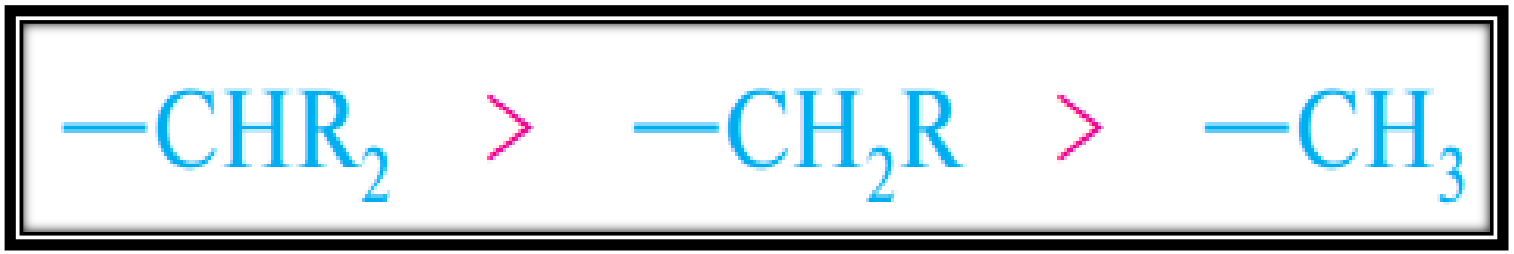
• Benzol quyosh nuri ta’sirida xlor bilan birikib geksaxlorsiklogeksan (geksaxloran) hosil qiladi.



Oksidlanish reaksiyasi

- Benzol oksidlanishga ancha chidamli. Undan farq qilib, benzol gomologlari ancha oson oksidlanish reaksiyasiga kirishadi. Benzol gomologlariga kuchli oksidlovchilar ta’sir ettirilganda (KMnO4) faqat yon zanjir oksidlanadi.

Alkil guruhlari oksidlovchilar ta’sirida reaksion qobilyati jihatidan quyidagi ketma-ketlikda joylashadi:

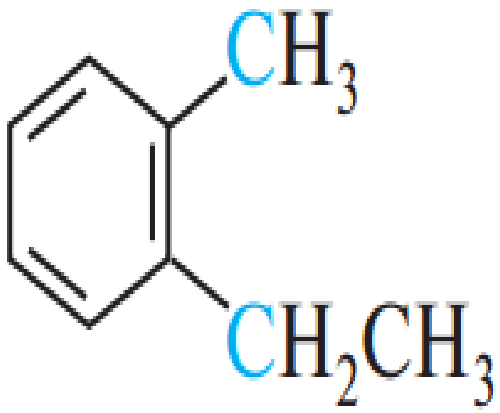


$$5C_6H_5{-}CH_3 + 6KMnO_4 + 9H_2SO_4 \longrightarrow$$

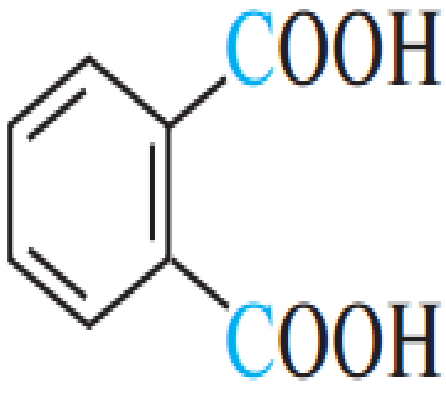
metilbenzol

$$\longrightarrow 5C_6H_5{-}C(=O)OH + 6MnSO_4 + 3K_2SO_4 + 14H_2O$$

benzoy kislota



$\xrightarrow{[O]}$

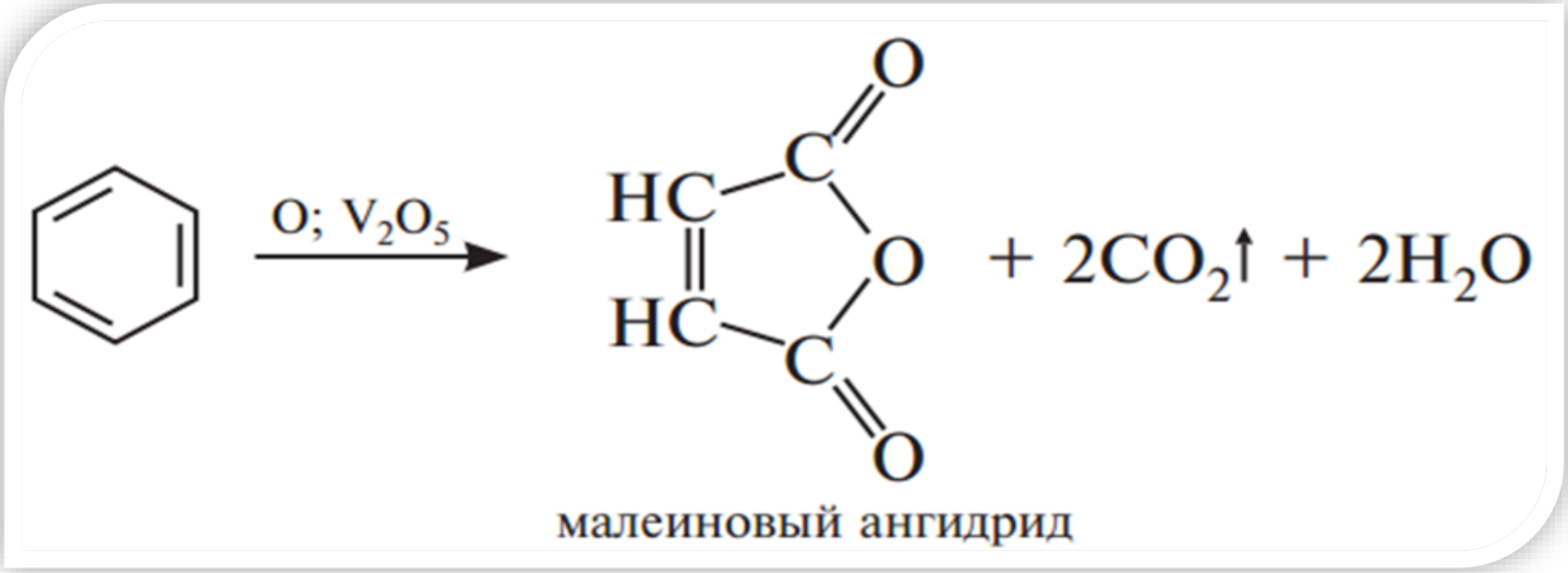


$+ CO_2\uparrow + H_2O$

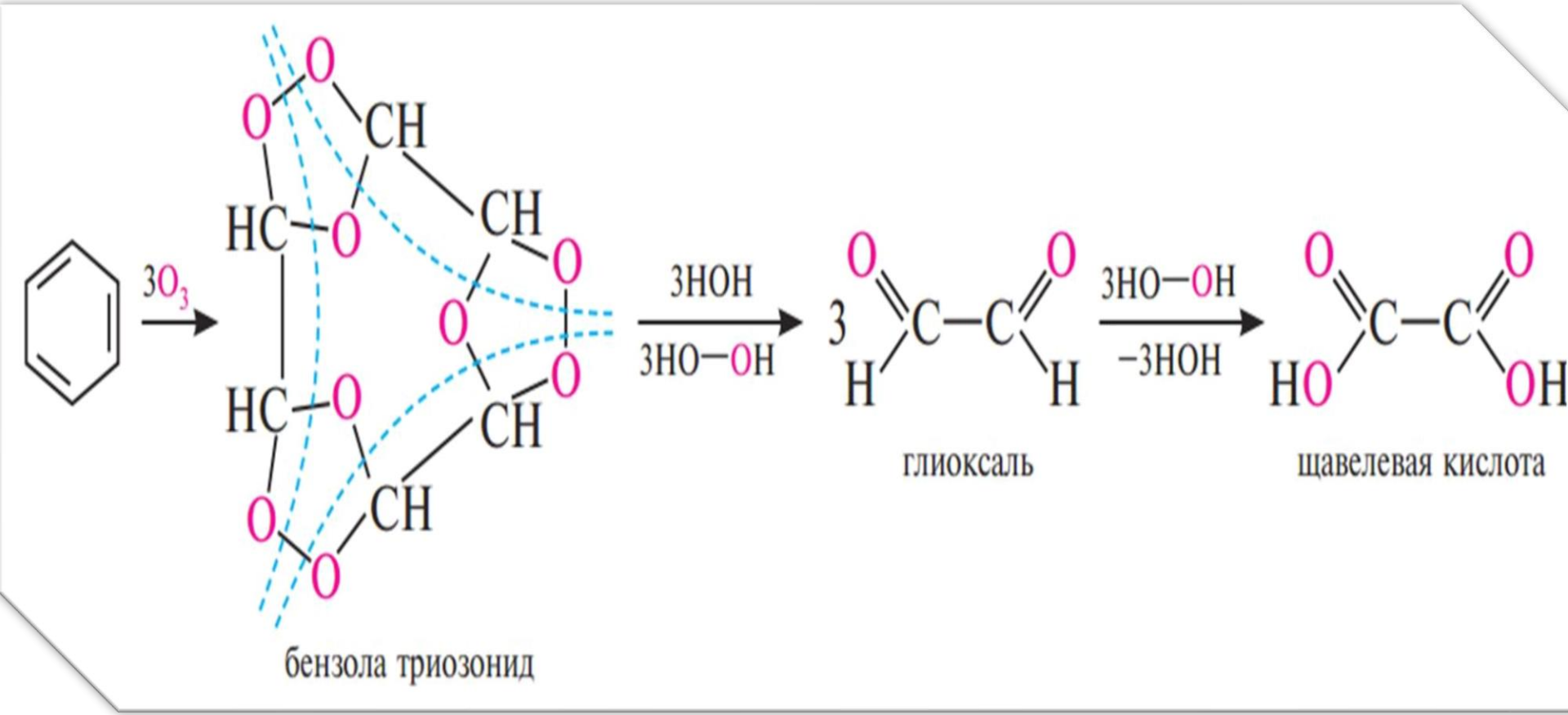
o-этилтолуол

фталевая кислота

Benzol halqasini oksidlash: Juda kuchli oksidlovchi muhitida 400-500^C kislorod va vanadiy
(V) oksidi katalizatori ta’sirida benzol halqasi oksidlanadi:



Benzol ozon ta’sirida triozonidlar hosil qilib, ular keyingi bosqichda va suv bilan reaksiyaga kirishib dikarbon kislota hosil qiladi:



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E’TIBORINGIZ UCHUN RAXMAT!