

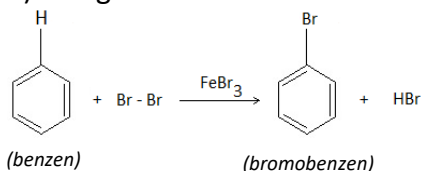
Arene – proprietăți chimice, utilizări

V. Proprietăți chimice

I. REACȚII LA NUCLEUL AROMATIC

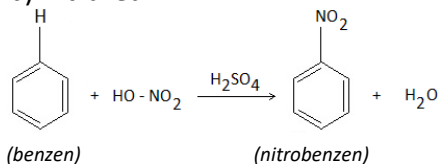
1) Substituția:

a) halogenarea:

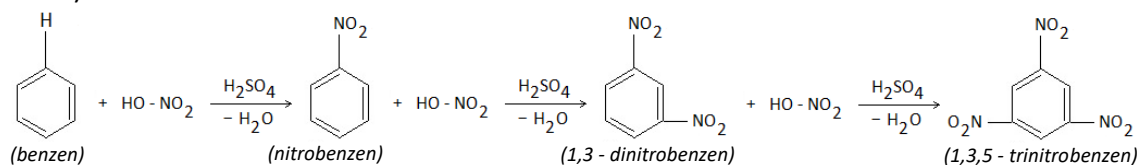


Observație I. Substituenții de ordinul I (–CH₃, –C₂H₅, –X, –C₆H₅, –CH=CH₂, –OH, –NH₂, –CH₂X) orientează în pozițiile orto (o-) și para (p-);

b) nitrarea:

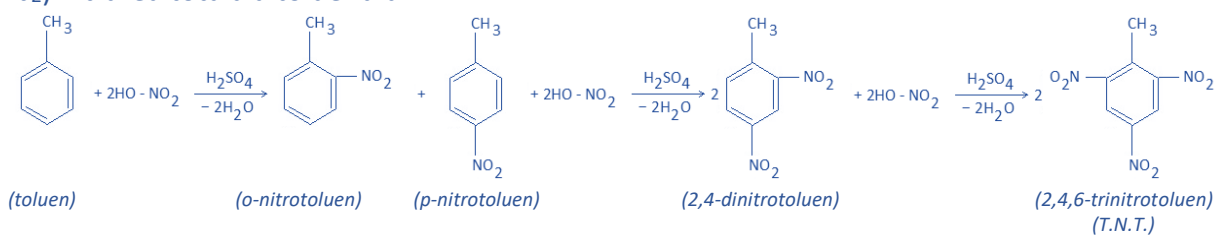


b₁) nitrarea totală a benzenului:

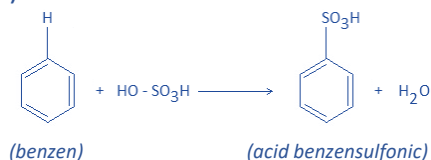


Observație II. Substituenții de ordinul II (–CN, –NO₂, –SO₃H, –COOH) orientează în poziția meta (m-).

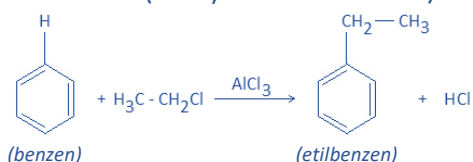
b₂) nitrarea totală a toluenului:



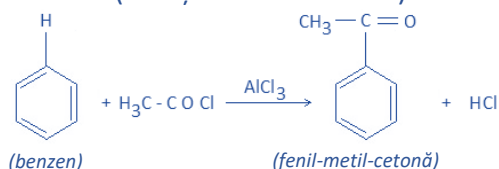
c) sulfonarea:



d) alchilarea (reacție Friedel-Crafts):

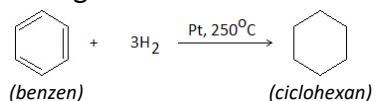


e) acilarea (reacție Friedel-Crafts):

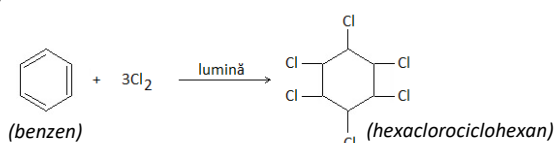


2) Adiția:

a) hidrogen:

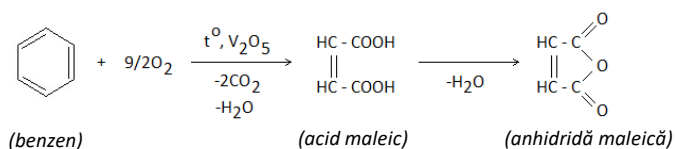


b) clor:

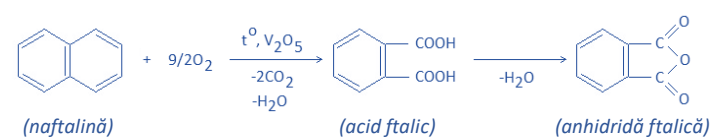


3) Oxidarea:

a) benzen:

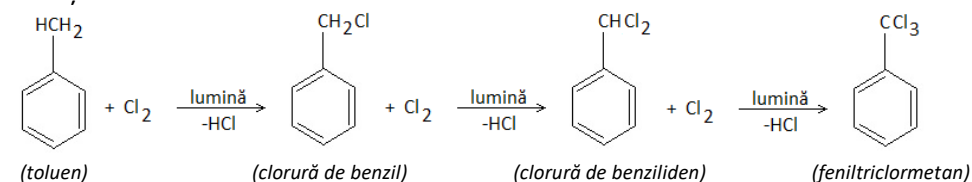


b) naftalină:



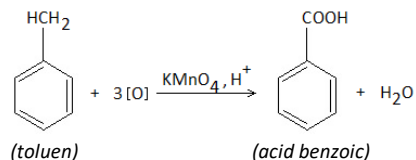
II. REACȚII LA CATENA LATERALĂ

1) Substituția:

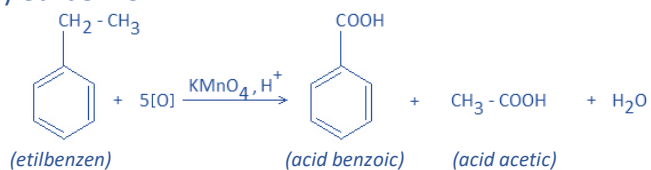


2) Oxidarea:

a) toluen:



b) etilbenzen:



VI. Utilizările benzenului - solvent, medicamente, fire, fibre sintetice, coloranți, insecticide, esențe, explozibili, rășini, detergenți, polimeri, cauciuc.