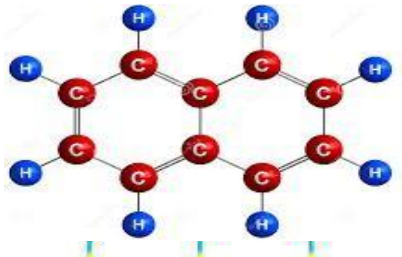
POLYNUCLEAR HYDROCARBONS

DEFINATION

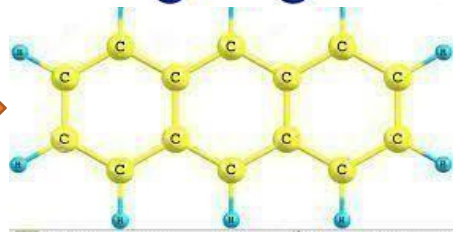
A polynuclear aromatic hydrocarbon is a hydrocarbon made up of fused aromatic ring molecules. These rings share one or more sides and contain delocalized electrons. Another way to consider PAHs is molecules made by fusing two or more benzene rings.

Examples

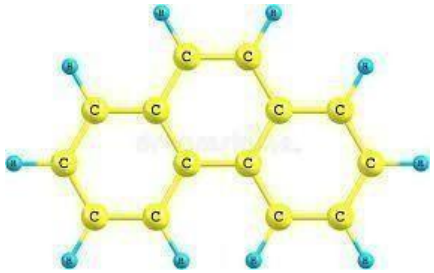
Naphthalene



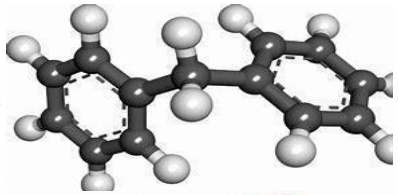
Anthracene



Phenanthrene

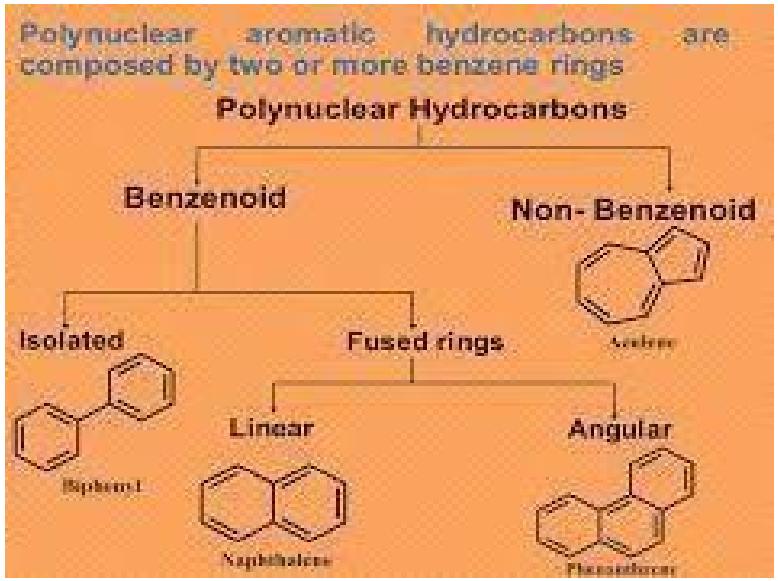


Diphenylmethane



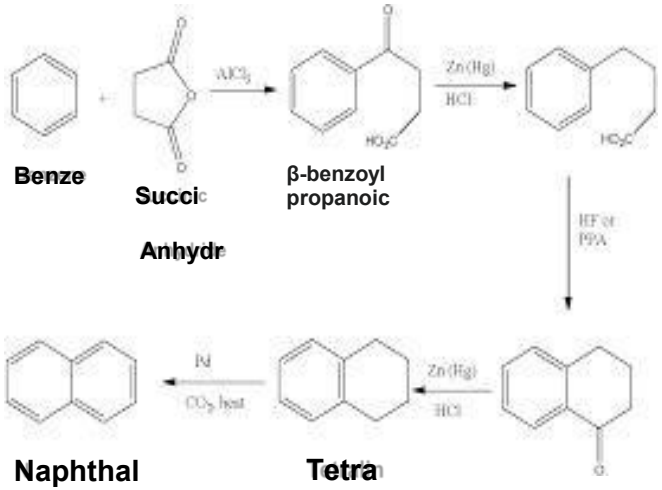
Triphenylmethane

CLASSIFICATION OF POLYNUCLEAR HYDROCARBONS



METHOD OF PREPARATION OF NAPHTHALENE

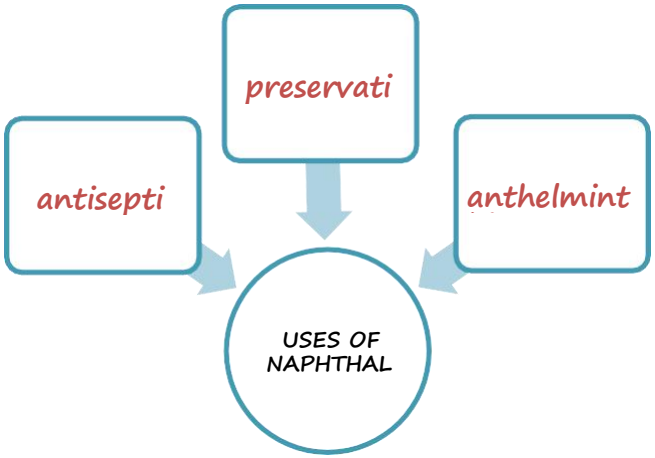
1. HAWORTH SYNTHESIS



CHEMICAL PROPERTIES OF NAPHTHALENE

Sr no	Typeof reaction	Reactant	Reagent	Product
1	Chlorinatio n	Naphthalene	FeCl3/Cl2	α -chloro Naphthalene
2	Nitration	Naphthalene	HNO3/H2SO 4	1-nitro Naphthalene
3	Sulphonation	Naphthalene	H2SO4	Naphthalene sulphonic acid
4	Alkylation	Naphthalene	R-X	Alkyal naphthalene
5	Acylation	Naphthalene	FeCl3	Acto-naphthalene
6	Oxidation	Naphthalene	K2Cr2O7	1,4Naphthaquino ne
7	Reduction	Naphthalene	Na/C2H5OH Reflux	1,4Dihydro Naphthalene

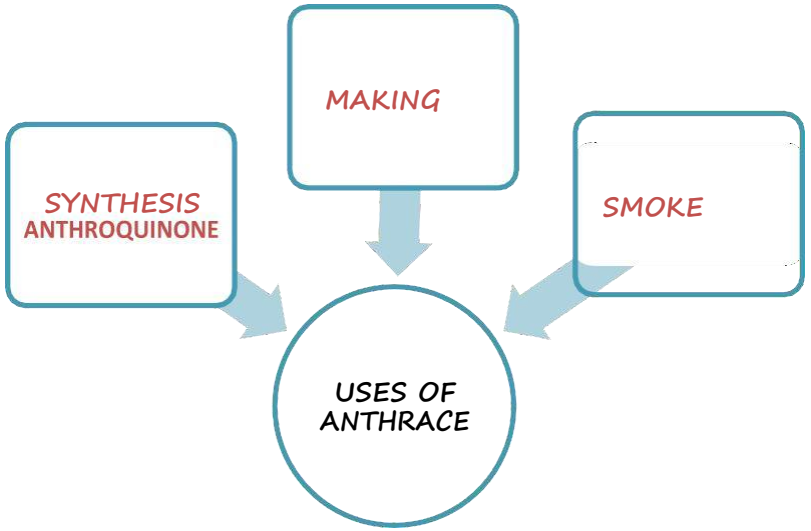
USES OF NAPHTHALENE



CHEMICAL PROPERTIES OF ANTHRACENE

Sr no	Typeof reaction	Reactant	Reagent	Product
1	Chlorination	Anthracene	FeCl3/Cl2	α -chloro Anthracene
2	Nitration	Anthracene	HNO3/H2SO4	1-nitro Anthracene
3	Sulphonation	Anthracene	H2SO4	Anthracene sulphonic acid
4	Alkylation	Anthracene	R-X	Alkyal Anthracene
5	Acylation	Anthracene	FeCl3	Acto Anthracene
6	Oxidation	Anthracene	K2Cr2O7	9,10Antraquinone
7	Reduction	Anthracene	Na/C2H5OH Reflux	9,10 dihydro Anthracene

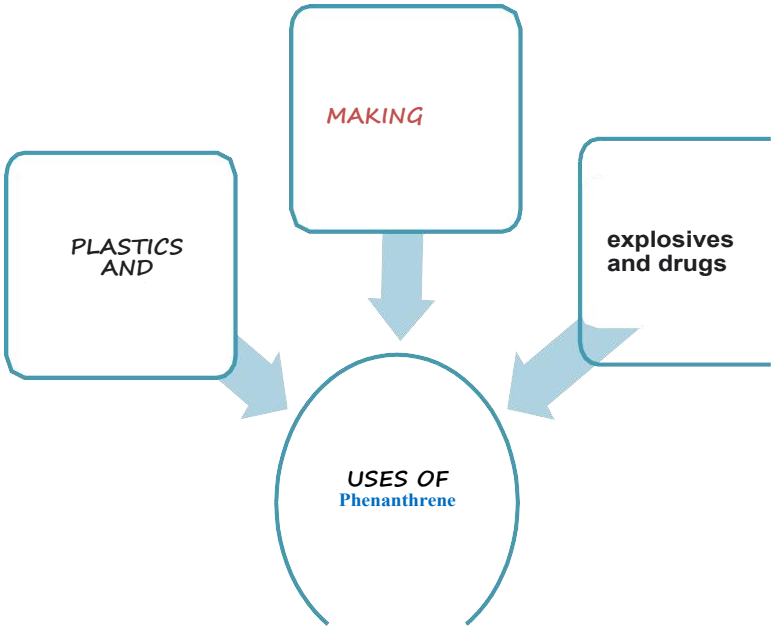
USES OF ANTHRACENE

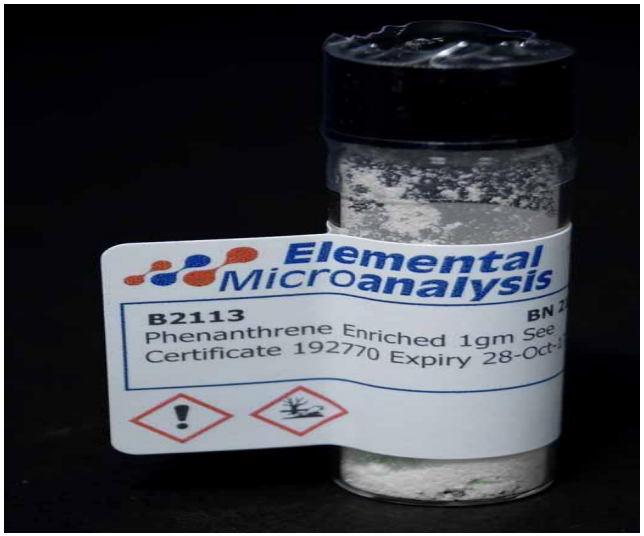


CHEMICAL PROPERTIES OF PHENANTHRENE

Sr	Typeof reaction	Reactant	Reagent	Product
1	Chlorination	Phenanthrene	Fecl3/Cl2	α -chloro phenanthrene
2	Nitration	Phenanthrene	HNO3/H2SO4	1-nitro phenanthrene
3	Sulphonation	Phenanthrene	H2SO4	phenanthrene sulphonic acid
4	Alkylation	Phenanthrene	R-X	Alkyal phenanthrene
5	Acylation	Phenanthrene	FeCl3	Acto phenanthrene
6	Oxidation	Phenanthrene	K2Cr2O7	9,10phenanquinone
7	Reduction	Phenanthrene	Na/C2H5OH Reflux	9,10 dihydro Phenanthrene

USES OF PHENANTHRENE

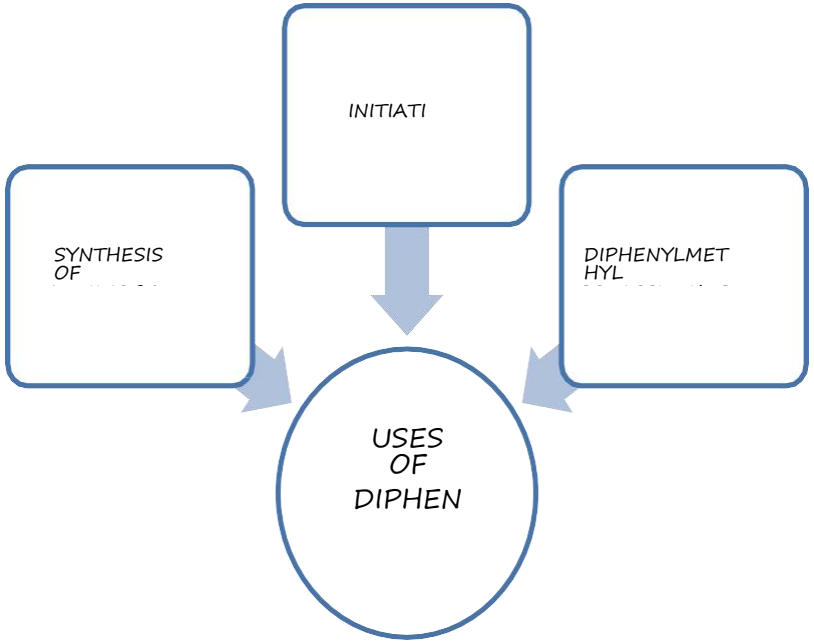




CHEMICAL PROPERTIES OF DIPHENYL METHANE

Sr	Typeof reaction	Reactant	Reagent	Product
1	Chlorination	DIPHENYL METHANE	FeCl3/Cl2	α -chloro DIPHENYL METHANE
2	Nitration	DIPHENYL METHANE	HNO3/H2SO4	1-nitro DIPHENYL METHANE
3	Sulphonation	DIPHENYL METHANE	H2SO4	DIPHENYL METHANE sulphonic acid
4	Alkylation	DIPHENYL METHANE	R-X	Alkyal DIPHENYL METHANE
5	Acylation	DIPHENYL METHANE	FeCl3	Acto DIPHENYL METHANE
6	Oxidation	DIPHENYL METHANE	K2Cr2O7	9,10 benzophenone

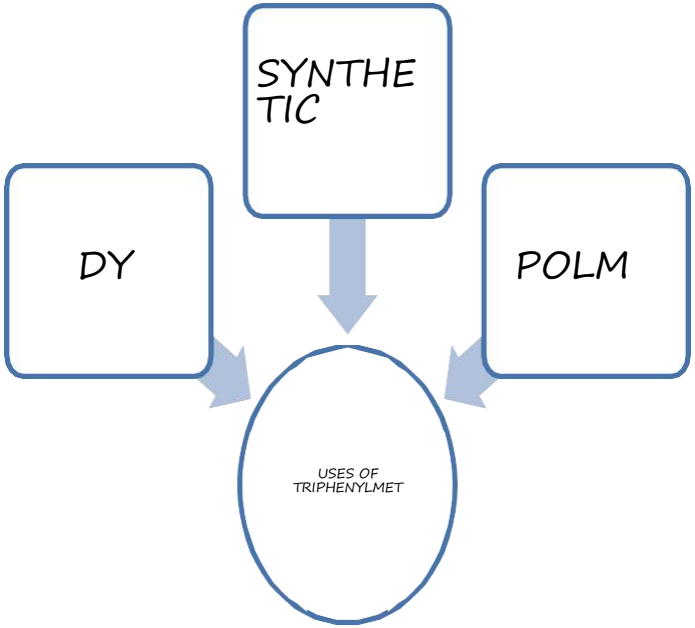
USES OF DIPHENYL METHANE

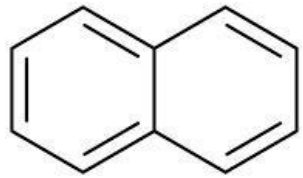
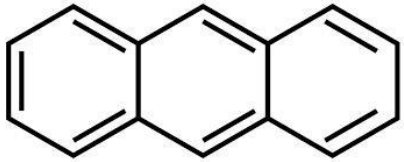
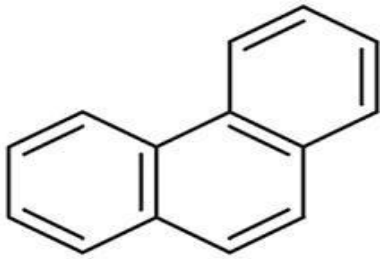


CHEMICAL PROPERTIES OF TRIPHENYL METHANE

Sr	Typeof reaction	Reactant	Reagent	Product
1	Chlorination	TRIPHENYL METHANE	Fecl3/Cl2	α -chloro TRIPHENYL METHANE
2	Nitration	TRIPHENYL METHANE	HNO3/H2SO4	1-nitro TRIPHENYL METHANE
3	Sulphonation	TRIPHENYL METHANE	H2SO4	TRIPHENYL METHANE sulphonic acid
4	Alkylation	TRIPHENYL METHANE	R-X	Alkyal TRIPHENYL METHANE
5	Acylation	TRIPHENYL METHANE	FeCl3	Acto TRIPHENYL METHANE
6	Oxidation	TRIPHENYL METHANE	K2Cr2O7	9,10 benzophenone

USE OF TRIPHENYL METHANE



1 HAWORTH SYNTHESIS NAPHTHALENE	Benzene	Succinic Anhydride	1.ALCL3/Zn(Hg)HCL 2. RING CLOSING 3.DEHYDROGENATION 4. RING CLOSING	NAPHTHALENE 
2.HAWORTH SYNTHESIS ANTHRACENE	Benzene	Pthalic Anhydride	1.ALCL3/Zn(Hg)HCL 2. RING CLOSING 3.DEHYDROGENATION 4. RING CLOSING	ANTHRACENE 
3..HAWORTH SYNTHESIS PHENANTHRENE	Naphthalene	Succinic Anhydride	1.ALCL3/Zn(Hg)HCL 2. RING CLOSING 3.DEHYDROGENATION 4. RING CLOSING	PHENANTHRENE 

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