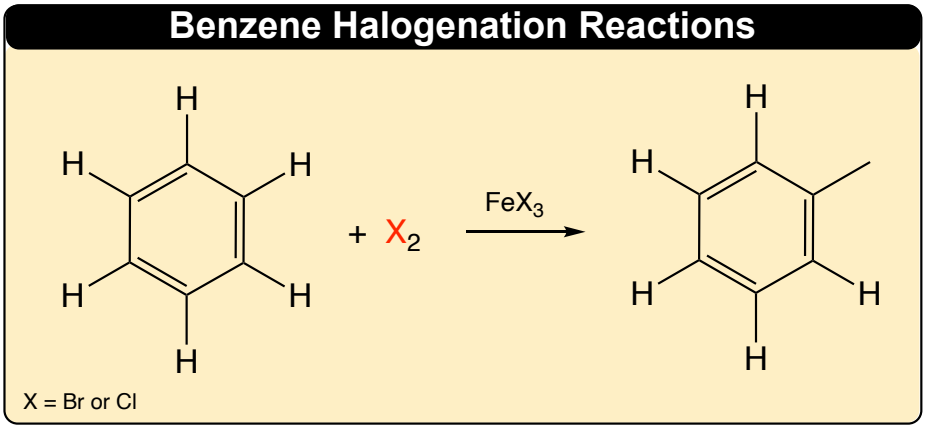
CONCEPT: BENZENE REACTIONS

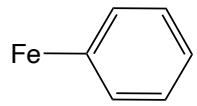
- Benzene is *aromatic* and uniquely _____.
  - □ Benzene undergoes _____ reactions, unlike alkenes and alkynes.
    - We will cover 2 types of substitution reactions: (1) Halogenation, (2) Friedel Craft _____.

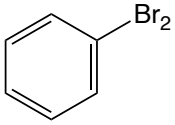
Halogenation Reactions

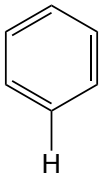
- Benzene reacts with Br_2 or Cl_2.
  - □ One of the ____ on benzene ring is substituted with a X (Br or Cl).
  - □ A _____ (FeX_3) must be used and has to contain the _____ X as the reagent.

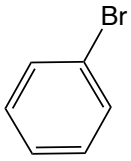


EXAMPLE: Which of the following is a correct product of benzene substitution reaction with Br_2?

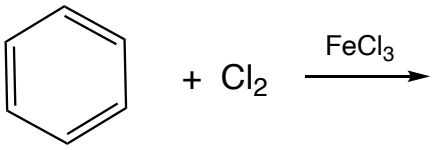
a) 

b) 

c) 

d) 

PRACTICE: Name the product of the following benzene halogenation reaction.

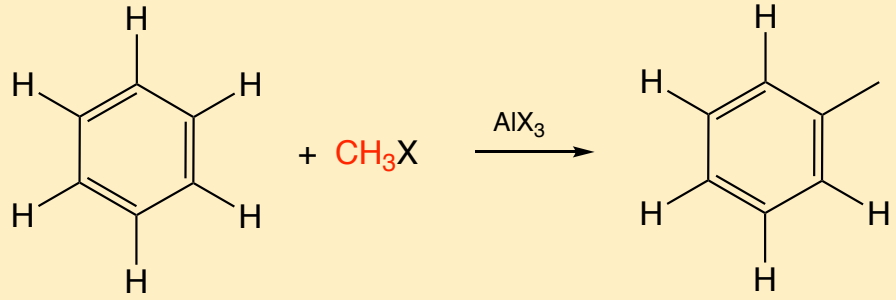


CONCEPT: BENZENE REACTIONS

Friedel Craft Alkylation

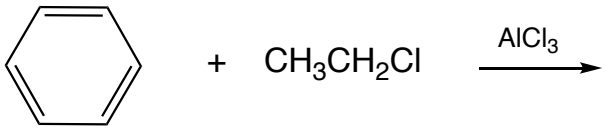
- Benzene reacts with an alkyl _____.
  - □ One of the ____ on benzene ring is substituted with an _____ group.
  - □ A _____ (AlX_3) must be used and has to contain the _____ X as the reagent.

Benzene Friedel Crafts Alkylation Reaction



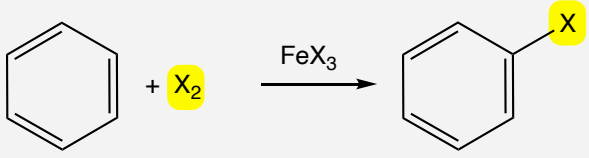
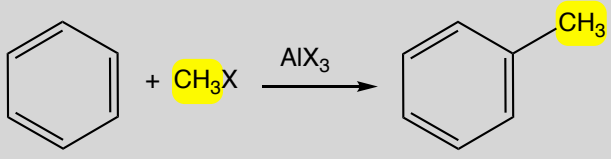
X = Br or Cl

EXAMPLE: Name the major product of the following Friedel Crafts Alkylation reaction.



Summary

Summary of Benzene Reactions

Reaction	Reagent	Catalyst	Example
Halogenation	Halogen X_2	FeX_3	
Friedel Crafts Alkylation	Alkyl halide CH_3X	AlX_3	

CONCEPT: BENZENE REACTIONS

PRACTICE: Provide a complete reaction of benzene Friedel Crafts alkylation with 2-bromo-2-methylpropane and name the product.

PRACTICE: Fill in the missing reagent for the provided reaction.