Class - B.Sc. Part I (Subsidiary)
Subject - chemistry
Paper - gr c.
Topic - Grignard reagent
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Grignard reagent

Alkyl magnesium halide is known as grignard reagent. It is an organomagnesium compound which can be represented by the chemical formula "R-Mg-X". where R represented to an alkyl or aryl gr and X refers to a halogen.

These reagents were discovered by the French chemist victor Grignard.

Preparation :- Grignard reagents are prepared by the action of dry magnesium on dry alkyl or aryl halide in presence of ether.

$$R\text{-}X + Mg \xrightarrow{\text{ether}} R\text{-}Mg\text{-}X$$

Grignard reagent

Procedure :- Pure and dry alkyl halide and magnesium (calculated amount) are taken in a round bottom flask

heated with reflex condenser. Ether is also taken in the flask which acts a solvent.

The top of condenser is fitted with anhydrous $CaCl_2$ tube. So that, the apparatus is completly free from moisture. When the reaction start magnesium are dissolved and ~~[illegible]~~ etharal solution of grignard reagent (alkyl magnesium halide) is obtained.

Limitations of reaction

Grignard reagent can not be prepared from such alkyl halides which contain groups with which it is known to react. Thus only few groups like $-R$, $-OR$, $-X$ may be present in alkyl halide from which grignard reagent is to be prepared. Alkyl halide, containing groups like $-COOH$, $-OH$, $-NH_2$, $>C=O$, $-COOR$, $-NO_2$, $-SO_3H$ and the like can not form this reagent.