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Course: CHM 102

$CH_3OCH_3$ — Dimethyl Ether
$CH_3CH_2OCH_2CH_3$ — Methoxyethane Ethoxyethane
$(CH_3CH_2CH_2CH_2)_2O$ — Butoxymethane
$CH_3CH_2OCH_3$ — methoxylethane
$CH_3CH_2CH_2OCH_2CH_3$ — Ethoxypentene

Physical
An ether molecule has a net elipde moment. ~~we Co~~
The boiling point is Comparable to the alkanes
The miscibility of ethers with water resembles that of alcohols
Ether molecules are miscible in water
Chemical
Cleavage of C-O Bond:- Ethers are generally very unreactive in nature. when an access of hydrogen halide is added to the ether, cleavage of C-O bond takes place leading to the formation of alkyl halides The order of reactivity is given as
$HI > HBr > HCl$
Electrophilic Substitution:- The alkoxy group in ether activates the aromatic ring at ortho and para positions for electrophilic Substitution reactions are halogenation Friedel Crafts reaction.
Halogeneration of Ethers:- Aromatic ethers undergo halogenation for example, bromination upon the addition halogen in the presence or absence of a catalyst

1) Preperation of ~~the~~ Ethers by Dehydration of Alcohols :-
In the presence of protic acids (sulphuric acid), alcohols undergo dehydration to produce alkenes and ~~the~~ ethers under different conditions. ~~for~~

$$CH_3CH_2OH \xrightarrow[443K]{H_2SO_4} CH_2=CH_2$$

$$CH_3CH_2OH \xrightarrow[413]{H_2SO_4} C_2H_5OC_2H_5$$

2) Preparation of ethers by williamson Synthesis:- Williamson Synthesis is an important method for the preperation of Symmetrical and asymmetrical ethers in laboratories. ~~ethers in laboratories. In this~~
In this method, an alkyl halide is reacted with Sodium alkoxide which leads to the formation of ether. The reaction generally follows the $S_N2$ mechanism for primary alcohol

$$R-X + R-\ddot{O}^{-}\,Na^{+} \longrightarrow R-\ddot{O}-R' + NaX$$

A is used to make adhesives
detergents
polyester