NAME: Aibangbee Efeosa Anthonia

DEPARTMENT: Pharmacy

MATRIC NO.: 19/MHS11/021

COURSE: CHEMISTRY( CHM102)

Assignment

1a. CH3OCH3 - Methoxymethane

b.CH3CH2OCH2CH3 -Ethoxyethane

c.(CH3CH2CH2CH2)2O- Butoxymethane

d.CH3CH2OCH3 -Methoxyethane

e.CH3CH2CH2OCH2CH3 –Ethoxypropane

2. properties of ethers

physical

a. At room temperature, ethers are colourless, neutral liquids with pleasant odours.

b. Ethers are less soluble in water than are the corresponding alcohols. They are miscible with most organic solvents.

c. Most of the simple ethers are less dense than water. The density increases with increasing relative molecular mass.

d. ethers with Low molecular mass have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true.

e. Ethers are inert at moderate temperature which leads to their wide use as reaction media.

Chemical

### a. Reactions of Ether Due to an Alkyl Group

* Combustion: Ethers are highly inflammable and they form extremely explosive mixtures with air giving CO2 and water.

C2H5O C2H5 + 6O2   →   4CO2 + 5H2O

* Halogenation: The alkyl group undergoes substitution reaction with chlorine or bromine. The resultant product is halogenated ether in absence of sunlight. However, in presence of sunlight, it substitutes all the hydrogen atoms of ethers.

CH3CH2OCH2CH3    cl2-dark       CH3CHCIOCHCICH3 (α α’-dichloro diethyl ether)

CH3CH2OCH2CH3      cl2-dark         C2CI2OC2CI5 (Perchloro diethyl ether)

b.Reactions of Ether Involving Cleavage of Carbon-Oxygen Bond

* Action of dil. H2SO4**:** Ethers, on heating with dilute H2SO4 , under high pressure, hydrolyse to corresponding alcohols.
* Action of Conc. H2SO4**:**Ethers, on warming with conc. H2SO4 , give alkyl hydrogen sulphate.

R-OR  +  conc. H2SO4   →    2R HSO4

R-OR’  +  conc. H2SO4 →  RHSO4  +  R’HS

3. Method of preparation

a. Partial dehydration of alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate(vi) acid is heated at a carefully maintained temperature of 140oC. this process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170-180oC, further dehydration to yield alkene occurs

2ROH conc. H2SO4 /140oC R-O-R + H2O

Examples

2CH3CH2OH conc. H2SO4 /140oC CH3CH2-O-CH2CH3 + H2O

b. Controlled catalytic hydration of olefins

2CH3CH=CH2 + H2O (CH3)2CH-O-CH(CH3)2

2-isopropoxypropane

4. uses of ethylene oxides

a. it is used as a fumigant in certain agricultural products.

b. it is used as a sterilant for medical equipments and suppliers.

c. it is used in the preparation of non – ionic emulsifying agents, plastics, plasticisers, and several synthetic textiles.