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MATRIC NO: 19/MHS11/105

DEPARTMENT: PHARMACY

COURSE: CHM 102

ASSIGNMENT

1. a). Methoxymethane

b). Ethoxyethane

c). Butoxybutane

d). Methoxyethane

e). Ethoxypropane

1. Properties of ethers
2. Physical states: At room temperature, ethers are colorless, neutral liquids with pleasant odors. The lower aliphatic ethers are highly flammable gases or volatile liquids.
3. Solubility: Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxyethane are fairly soluble in water since the molecule are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.
4. Density: most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.
5. Boiling point: Low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals longer than four carbon atoms, the reverse is true. The boiling point of ethers tend to approximate those of hydrocarbons of same relative molecular mass from which it can be concluded that the molecules are not associated in the liquid phase as there are no suitable available hydrogen for association through hydrogen bonds.
6. Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media.
7. Preparation of ethers
8. 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 140°C. This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170°-180°C, further dehydration to yield alkene occurs

Conc. H2SO4/140°C

2ROH R-O-R + H20

Examples;

Conc. H2SO4/140°C

2CH3CH2OH CH3CH2-O-CH2CH3 + H20

1. From Haloalkanes and dry silver(I) oxide

Warm

2RX + Ag2O R-O-R +2AgX

Examples

Warm

2CH3CH2CH2Cl + Ag2O CH3CH2CH2OCH2CH2CH3+ 2AgCl

Propoxypropapane

1. Uses of ethylene oxide;
2. It is used as an accelerator of maturation of tobacco leaves and fungicide
3. It is also used as a main component of thermobaric weapons
4. It is used in the synthesis of 2-butoxyethanol, which is a solvent used in many products.