

NAME: TAGBEM VICTORIA IFEOLUWA

MATRIC No: 19/MHS02/053

DEPARTMENT: NURSING SCIENCE

COLLEGE: MEDICINE & HEALTH SCIENCES

COURSE CODE: CHM 102

ASSIGNMENT

1. IUPAC NAMES OF THE FOLLOWING

CH_3OCH_3 — Methoxymethane

$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ — Ethoxyethane

$(\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ — Dibutyl ether

$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ — Methoxyethane

$\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ — Ethoxypropane

2. Discuss THE PROPERTIES OF ETHERS

a) ethers are inert at moderate temperature

b) 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.

c) Physical state

At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.

d) 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 molecules are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecule increases there is a rapid decline in solubility. They are miscible with most organic solvents.

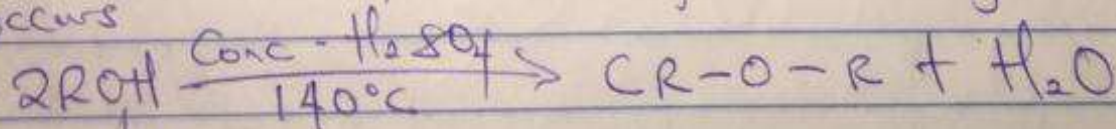
e) Boiling point:

Low molecular mass ethers have a lower boiling point ~~at~~ than the corresponding alcohols but those ethers containing alkyl radicals larger than few 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 suitably available hydrogen for association through hydrogen bonds.

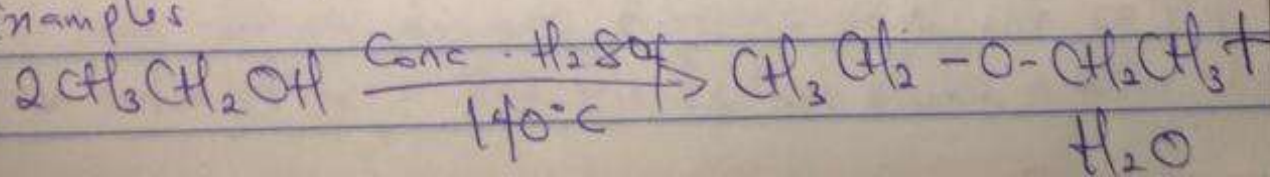
3 Discuss explicitly two methods of preparing ethers and show equations of reactions.

a) Partial dehydration of alcohols

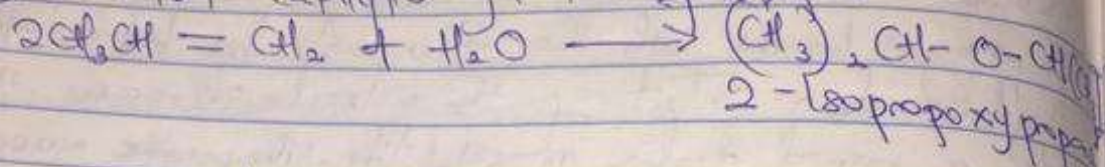
Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol is excess and concentrated tetraoxosulphate (VI) acid is heated at a carefully maintained temperature of 140°C . This process is known as continuous etherification. If excess alcohol is not used the temperature is as high as $170-180^{\circ}\text{C}$, further dehydration to yield alkene occurs



Examples



b) Controlled catalytic hydration of alkenes



4. Uses of ethylene oxide

a) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol

b) Ethylene oxide is used in the preparation of non-toxic emulsifying agents, plastics, plasticizers and several synthetic textiles

c) Ethylene oxide is used as a gaseous sterilizing agent

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1. I

- a)
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- e)
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2. F

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