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COURSE: CHM 102

DEPARTMENT: MPBS

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ANSWER TO ASSIGNMENT

- CH_3OCH_3 — Methoxymethane

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

$(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ — Butoxymethane

$\text{CH}_3\text{CH}_2\text{OCH}_3$ — Ethylmethyl ether

$\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ — Ethyl propyl ether (Ethoxypropane)

2. Properties of Ethers

a. General ~~Properties~~ Physical Properties

Ethers are colourless, neutral liquids with pleasant odours at room temperature. They are less soluble in water than the corresponding alcohols and miscible with organic solvents. 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.

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

Ethers are inert at moderate temperature.

Chemical Properties

The oxygen atom is sufficiently basic to undergo protonation in an acidic medium by the donation of a lone pair of electron, that is, it functions as a Lewis base.

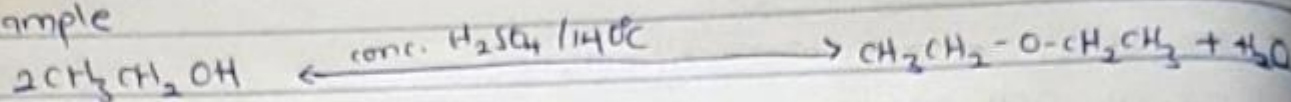
3. METHODS OF PREPARING ETHERS

i. Partial Dehydration of Alcohols

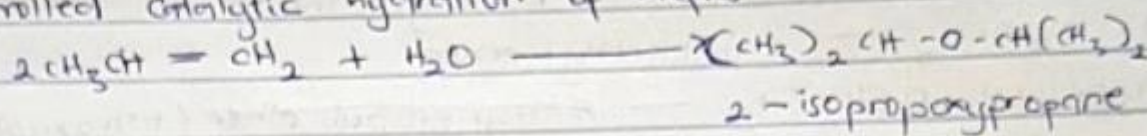
Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated

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 $170-180^{\circ}\text{C}$, further dehydration to yield alkene occurs.

Example



ii. Controlled catalytic hydration of olefins



4. uses of Ethylene Oxide

- It is used as a gaseous sterilizing agent.
- It is used in preparing anionic emulsifying agents, plastics, plasticizers and several synthetic textiles.
- It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.