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DEPARTMENT: MEDICINE AND SURGERY.

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COURSE: CHM 102.

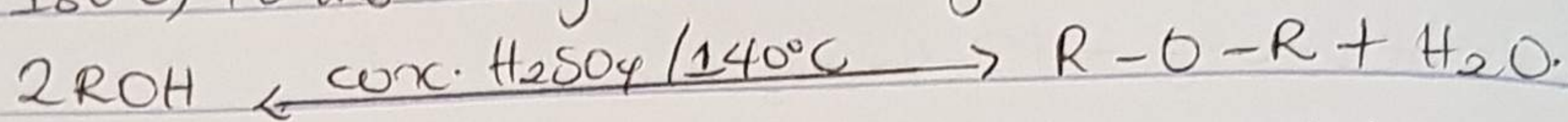
- i. CH_3OCH_3 - Methoxymethane
- ii $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane
- iii $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - Butoxymethane
- iv $\text{CH}_3\text{CH}_2\text{OCH}_3$ - Methoxyethane
- v. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypropane

2. The properties of ethers are:

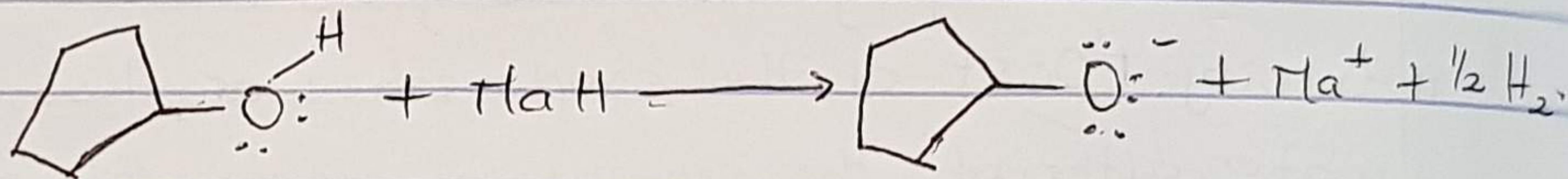
- i Physical states: At room temperature, ethers are colourless neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.
- ii Density: Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.
- iii Ether's boiling point is comparable to the alkanes
- iv They are less soluble in water than the corresponding alcohols
- v. Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media

3. Manufacture and Preparation of Ethers.

i. 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 used, the temperature is as high as $170-180^{\circ}\text{C}$, further dehydration to yield alkene occurs.



ii. Williamson Ether Synthesis: This is most widely used method to produce ethers. It occurs by an $\text{S}_{\text{N}}2$ reaction in which a metal ^{alkoxide} alkoxide displaces a halide ion, from an alkyl halide. The alkoxide ion is prepared by the reaction of an alcohol with a strong base such as sodium hydride



4. The uses of ethylene oxide:

- It is used as a gaseous sterilizing agent.
- It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- Ethylene oxide is used in the preparation of nonionic ~~emulsifying~~ emulsifying agents, plastics etc.