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Mechanics Department

CHM102

(1) $\text{CH}_3\text{OCH}_3 \rightarrow$ methoxymethane

$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ ethoxyethane

$(\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O} \rightarrow$ Buthoxy Butane

$\text{CH}_3\text{CH}_2\text{OCH}_3 \rightarrow$ methoxy ethane

$\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ ethoxy propane

2 Discuss the properties of ethers
General

(i) Physical states - At room temperature, ethers are colorless neutral liquids with pleasant odors. The lower aliphatic ethers are highly flammable gases.

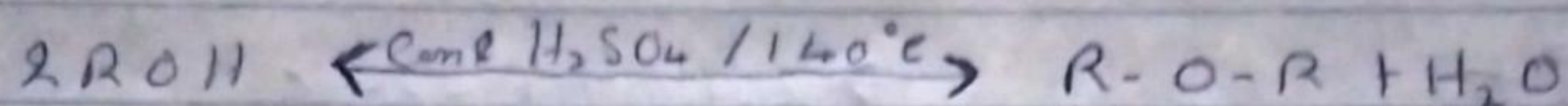
(ii) Density - Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass.

(iii) Solubility - ethers are less soluble in water than are the corresponding alcohols. Lower molecular weight ethers such as methoxymethane are fairly soluble in water.

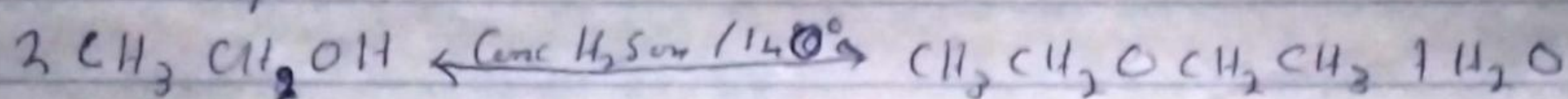
(iv) Reactivity - Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

3 Manufacture and Preparation of Ether

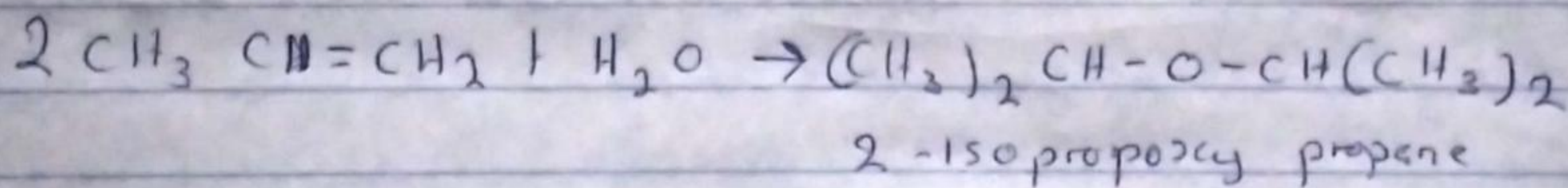
1 Partial dehydration of alcohols. Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and conc. H_2SO_4 is heated at a carefully maintained temp of $140^\circ C$. This process is known as continuous esterification. If excess alcohol is not used, the temperature is as high as $170-180^\circ C$, further dehydration to yield alkene occurs.



Examples



2 Controlled Catalytic hydration of olefins.



4 3 uses of ethylene oxide.

(1) It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

2 It is used as a gaseous sterilizing agent.

3 It is used in the production of plastics.