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Matric NO: 19/ENG04/057

Course: CHE102

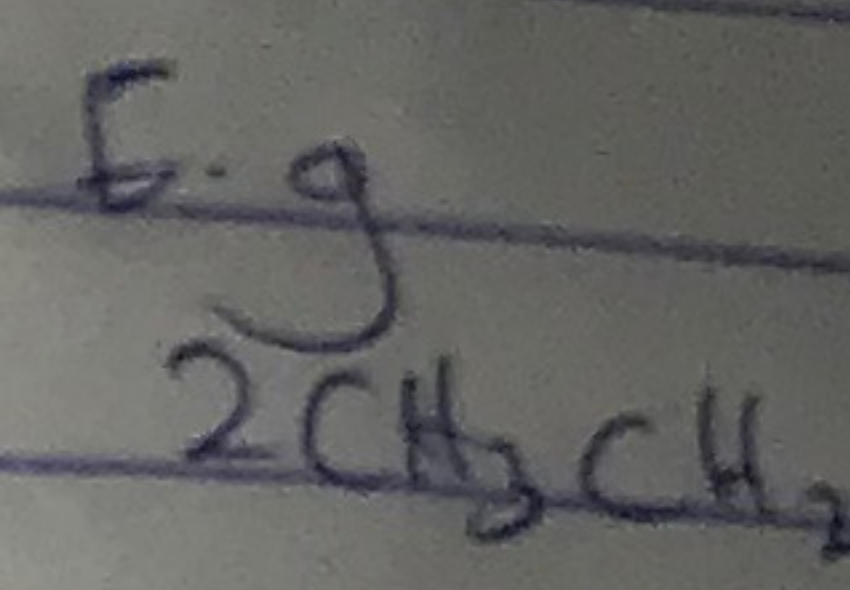
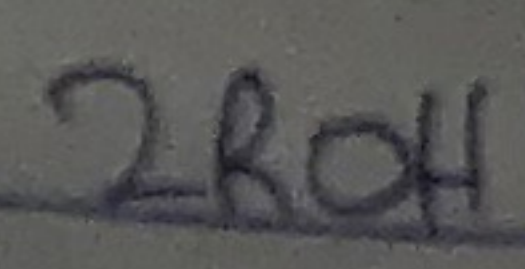
1.  $\text{CH}_3\text{OCH}_3 \rightarrow$  Methoxymethane  
 $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$  Ethoxyethane  
 $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O} \rightarrow$  Butoxymethane  
 $\text{CH}_3\text{CH}_2\text{OCH}_3 \rightarrow$  methoxyethane  
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$  Ethoxypropane.

## 2 Properties of ethers

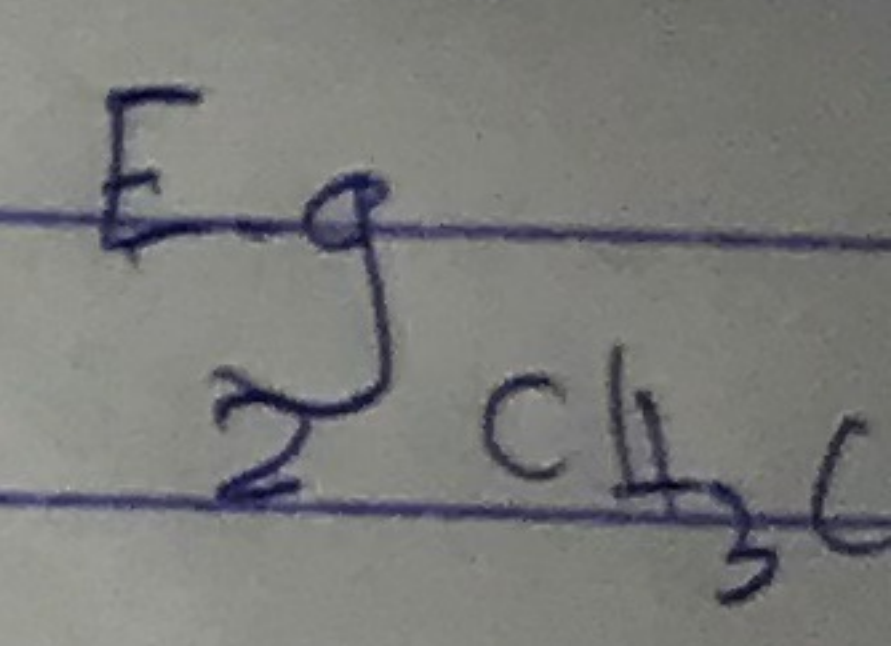
- i) Solubility: Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane are fairly soluble in water but as the hydrocarbon content of the molecule increases, there is a rapid decline in solubility.
- ii) Density: Most of the simple ethers 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) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media.
- iv) Physical states: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.

Boiling point: 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.

3 Partial dehydro  
Simple ethers  
The alcohol in ex  
carefully manufa  
continuous ether  
high at as 17  
occurs.



ii) from Haloc  
 $2\text{RX}$



4 i) Ethylene  
or ethylene

ii) Ethylene

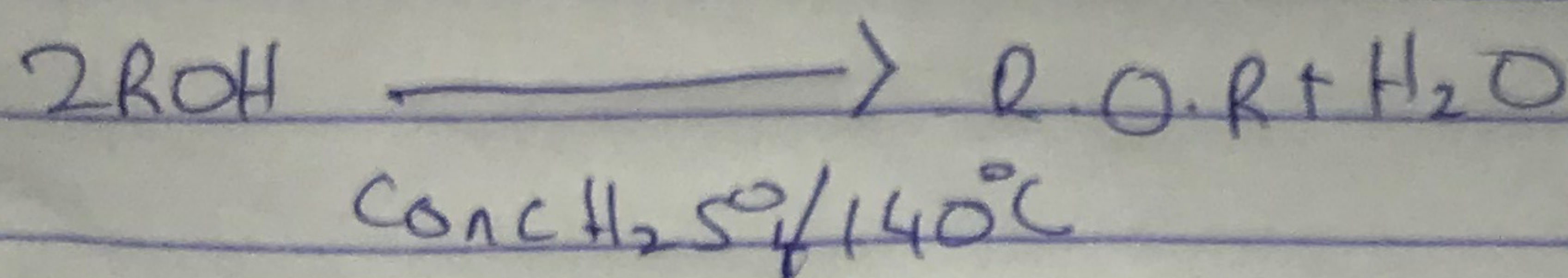
iii) Ethylene  
plastics, an



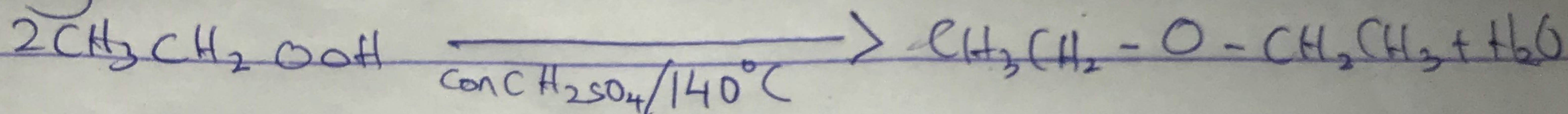
### 3 Partial dehydration of alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration.

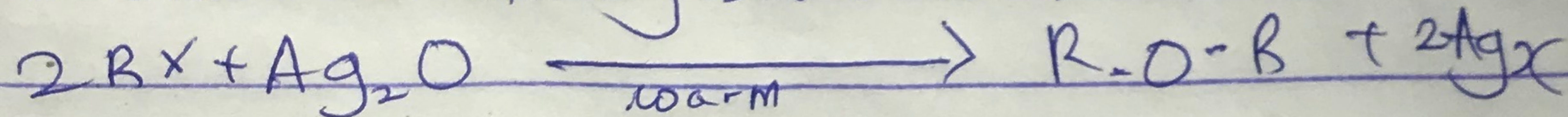
The alcohol in excess and concentrated  $H_2SO_4$  and acids heated at carefully manufactured temperature of  $140^\circ C$ . The process is known as continuous etherification of excess alcohol is not used the temperature is as high as  $170-180^\circ C$ , for further dehydration to yield alkene occurs.



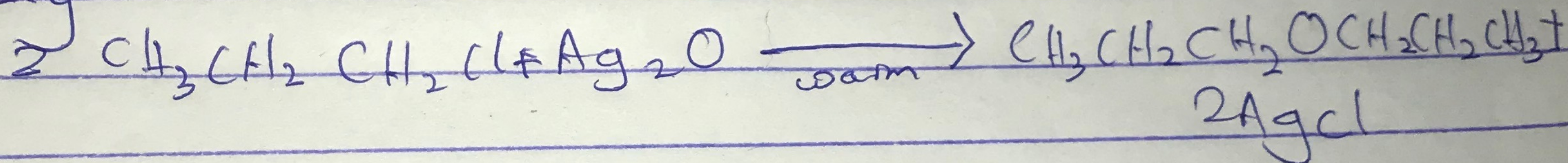
E.g



ii) from haloalkanes and dry silver(I) oxides



E.g



4) i) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene.

ii) Ethylene oxide is used as a gaseous sterilizing agent.

iii) Ethylene oxide is used in the preparation of non-ionic emulsifying agents, plastics, and several synthetic textiles.