

NAME: HARRISON DAVIDA EBERECHI

DEPARTMENT: MEDECINE AND SURGERY

MATRIC NO: 19/MHS01/181

1. IUPAC NAMES OF THE FOLLOWING

- 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
- $\text{CH}_3\text{CH}_2\text{OCH}_3$: Methoxyethane
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$: Ethoxypropane

2. PROPERTIES OF ETHERS

A. Physical states

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

B. Solubility

Ethers are less soluble in water than are 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 molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.

C. 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.

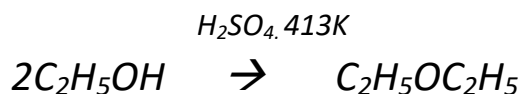
D. Boiling point

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. 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. METHODS OF PREPARING ETHERS

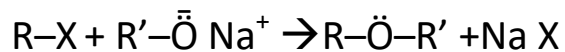
A. Dehydration of alcohols

In the presence of sulphuric acid, dehydration of ethanol yields Ethoxyethane at 413 K. this is an ideal method of preparation through primary alcohols. Preparation of ethers by dehydration of an alcohol is a nucleophilic substitution reaction



B. Williamson's synthesis

When an alkyl halide reacts with sodium alkoxide, ether is formed. This reaction is known as Williamson's synthesis. The reaction generally follows the S_N2 mechanism for primary alcohols.



4. USES OF ETHYLENE OXIDE

- A. It is primarily used as an intermediate in the production of several industrial chemicals eg, ethylene glycol
- B. It is used as a fumigant in certain agricultural product
- C. It is used as a sterilant for medical equipment and supplies