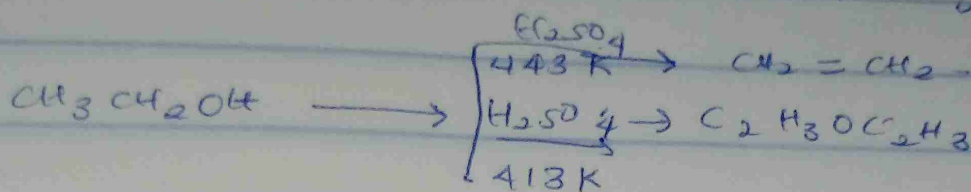


Ideal method of preparation through primary alcohols.



(ii) Preparation of ethers by Williamson Synthesis:

Williamson Synthesis is an important method for the preparation of symmetrical and asymmetrical ethers in laboratories. In this method, an alkyl halide is reacted with sodium alkoxide which leads to the formation of ether. The reaction generally follows the S_N^2 mechanism for primary alcohol.



As we know alkoxides are strong bases and they can react with alkyl halides leading to elimination reactions.

4. State 3 uses of ethylene oxide.

- (i) It is used to make antifreeze.
- (ii) It is used as a sterilization agent for medical equipment.
- (iii) It is used as a fumigant and pesticide.

CHEMICAL PROPERTIES OF ETHERS

1. cleavage of C-O bond: Ethers are generally ^{unreactive} ~~very inactive~~ in nature. When an excess of hydrogen halide is added to the ether cleavage of C-O bond takes place leading to the formation of alkyl halides. The order of reactivity is given as $\text{HI} > \text{HBr} > \text{HCl}$.
2. Electrophilic substitution: The alkoxy group in ether activates the aromatic ring at ortho and para positions for electrophilic substitution reaction like halogenation, Friedel-Craft's reaction etc.
3. Halogenation of ethers: Aromatic ethers undergo halogenation, for example, bromination, upon the addition of halogen in the presence or absence of a catalyst.

3 Discuss explicitly two methods of preparing ethers and show equations of reaction.

(i) Preparation of ethers by dehydration of alcohols

In the presence of protic acids (sulphuric acids) alcohols undergo dehydration to produce alkenes and ethers under different conditions. For example in the presence of sulphuric acid, dehydration of ethanol at 433K yields ethene whereas it yields ethoxyethane at 413K. This is an

NAME: KEVINDE JESUSNMIFE JESULATOMI
COURSE CODE: CHM 102
COLLEGE/DEPT: MHS / MBBS-
MAT NO.: 19/MHS01/228.

1. Give the IUPAC names of the following organic compounds!

1. CH_3OCH_3 - Dimethyl Ether.
2. $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - methoxyethane Ethoxyethane.
3. $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - \rightarrow Butoxyethane.
4. $\text{CH}_3\text{CH}_2\text{OCH}_3$ - methoxy ethane.
5. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypentane.

2. Discuss the properties of ethers.

PHYSICAL PROPERTIES OF ETHERS.

1. An ether molecule has a net dipole moment. We can attribute this to the polarity of C-O bonds.
2. The boiling point of ethers is comparable to the alkanes.
3. The miscibility of ethers with water resembles those of alcohols.
4. Ethers molecules are miscible in water.