

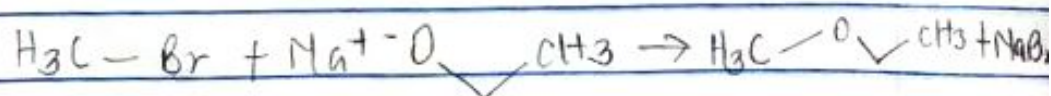
- b  $\text{CH}_3\text{OCH}_3$  - Methoxymethane
- b  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  - Ethoxyethane
- c  $\text{CCH}_3(\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$  - Butoxybutane
- d  $\text{CH}_3\text{CH}_2\text{OCH}_3$  - Ethoxymethane
- e  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$  - Ethoxypropane

## 2 Physical properties of ethers.

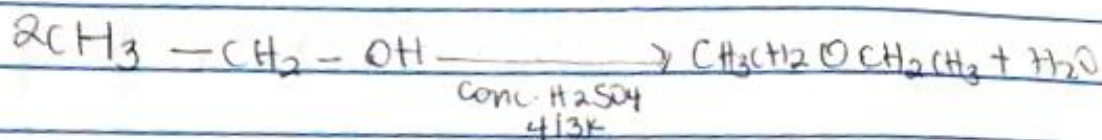
- a An ether molecule has a net dipole moment. We can attribute this to the POLARITY of C-O bonds. They are slightly polar.
- b The BOILING POINT of ethers is comparable to the alkanes. However, it is much lower compared to that of alcohols of comparable MOLECULAR MASS.
- c The miscibility of ethers with water resembles those of alcohols.
- d The SOLUBILITY decreases with increase in the number of carbon atoms.
- e Ethers are good organic solvents.

## 3 William Ether Synthesis.

Ethers can be made or synthesised using a method discovered by Alexander Williamson which is aptly named the William Ether synthesis. In this process, an alkoxide ion (an alcohol with the hydrogen removed) reacts with an alkyl halide (a hydrogen attached to a hydrocarbon). This is also called substitution reaction because the alkoxide ion replaces the halogen.



b Preparation of ethers by dehydration of Alcohols  
When alcohols are heated with conc.  $H_2SO_4$  at  $413K$ , ethers ( $ROPR'$ ) formed.



4 Uses of ethylene oxide.

- i Used as a raw material for industrial manufacture of ethylene
- ii Used as a fumigant for foods and textile.
- iii It is also used as a sterilant for medical equipment.