

Assignment

i) Primary Alcohols: In a primary (1°) alcohol, the carbon which carries the $-OH$ group is only attached to the one alkyl group. Some examples of primary alcohol include: ethanol (CH_3-CH_2-OH).

ii) Secondary Alcohols: In a secondary (2°) alcohol, the carbon with the $-OH$ group attached is joined directly to two alkyl groups, which may be the same or different. Example: Propan-2-ol ($CH_3-\overset{OH}{C}-CH_3$)

iii) Tertiary Alcohols: In a tertiary (3°) alcohol, the carbon atom holding the $-OH$ group is attached directly to three alkyl groups, which may be any combination of some or different. Examples: ~~Propan-2-ol~~ 2-methylpropan-2-ol ($CH_3-\overset{OH}{C}-CH_3$)

2) Alcohols Alcohols are soluble in water. This is due to the hydroxyl group in the alcohol which is able to form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. As the length of the hydrocarbon chain and higher, the decrease in solubility becomes visible as the mixture forms two immiscible layers of liquid. The reason why the solubility decrease as the length of the hydrocarbon increases is

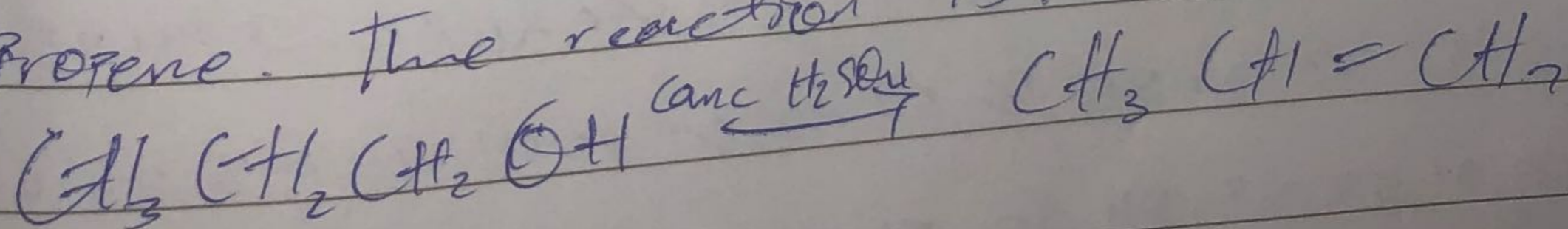
because it ~~is~~ requires more energy to overcome the hydrogen bonds between the ~~at~~ alcohol molecules as the molecules are more tightly packed together as the size and mass increase.

ii) Solubility in Organic solvent, is due to the combined strength of so many hydrogen bonds forming between oxygen atoms of one alcohol molecule and the ~~the~~ hydroxy: H atoms of another. The longer the carbon chain in an alcohol is, the lower the solubility in polar solvent and the higher in non polar solvent.

c) ~~Reaction~~ Dehydration of Propan-1-ol to propene:

* When propan-1-ol is treated with concentrated sulfuric acid (H_2SO_4) the phenomenon called ~~dehydration~~ dehydration occurs due to which a water molecule from propan-1-ol gets eliminated.

* Due to this propan-1-ol gets converted into propene. The reaction is:



Hydrolysis of Propene to Propan-2-ol

* Propene can be hydrolyzed to propan-2-ol in accordance with mechanism called as Markownikoff's addition

* It states that when an unsymmetrical reagent the negative part of the reagent gets attached itself to the carbon atom of the alkene which has less number of hydrogen atoms.

* In this case, the unsymmetrical reagent used is H_2O which is composed of H^+ and OH^- part.

* Due to hydrolysis of water, the negative part attaches itself to the propene and thus convert it as propan-2-ol

* The reaction involved is as follows:

