ORGANIC CHEMISTRY LESSON 4

Alcohols and Ethers

Primary Learning Goals

I can use IUPAC conventions to write systematic names and draw structures for alcohols and ethers.

I can name, describe, and recognise various chemical reactions involving alcohols and ethers, and predict the products of these reactions.

Alcohols

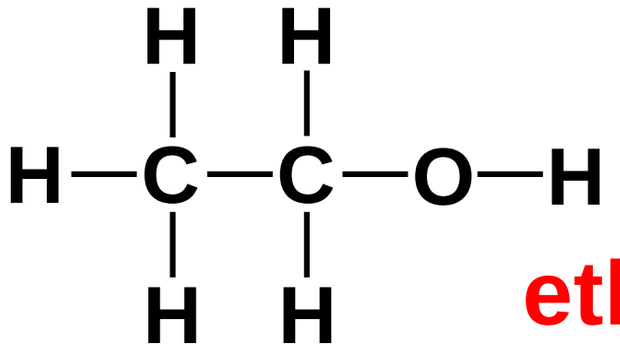
Generic Structure: R—OH

Functional Group: hydroxyl group (—OH)

Nomenclature: “-ol” suffix

“hydroxy-” branch

examples

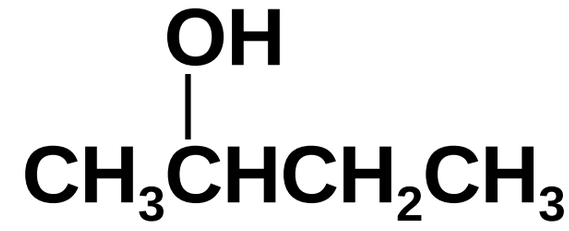


CH_3CH_2OH

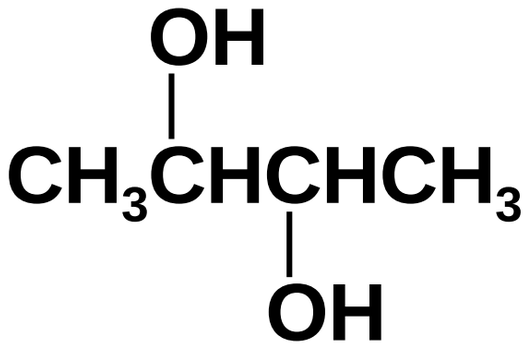
ethanol

$CH_3CH_2CH_2CH_2OH$

butan-1-ol

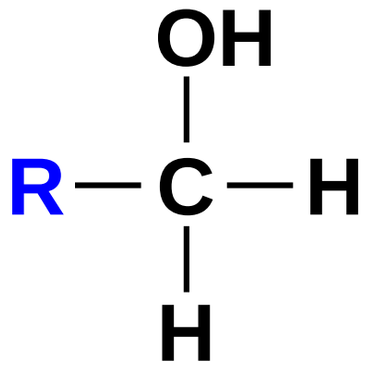


butan-2-ol

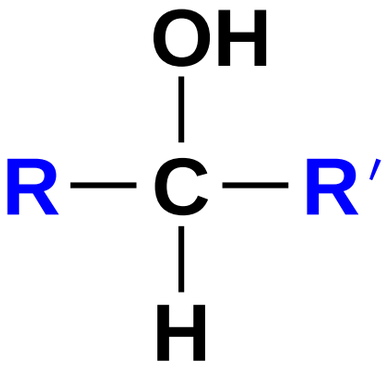


butane-2,3-diol

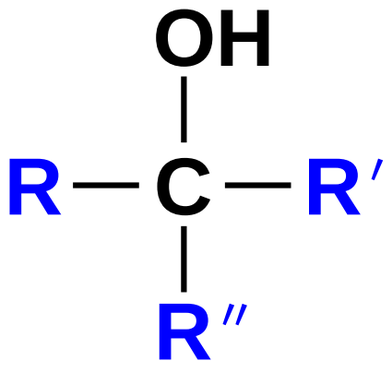
Primary, Secondary, and Tertiary Alcohols:



1° alcohol



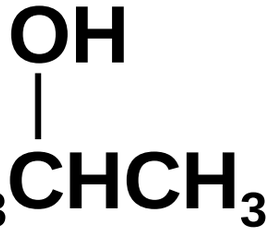
2° alcohol



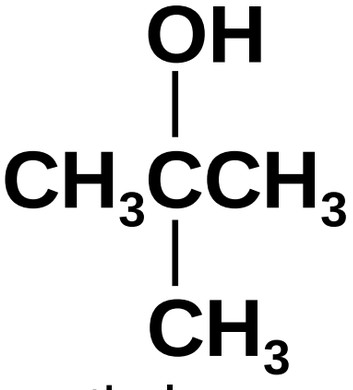
3° alcohol

CH_3CH_2OH

ethanol



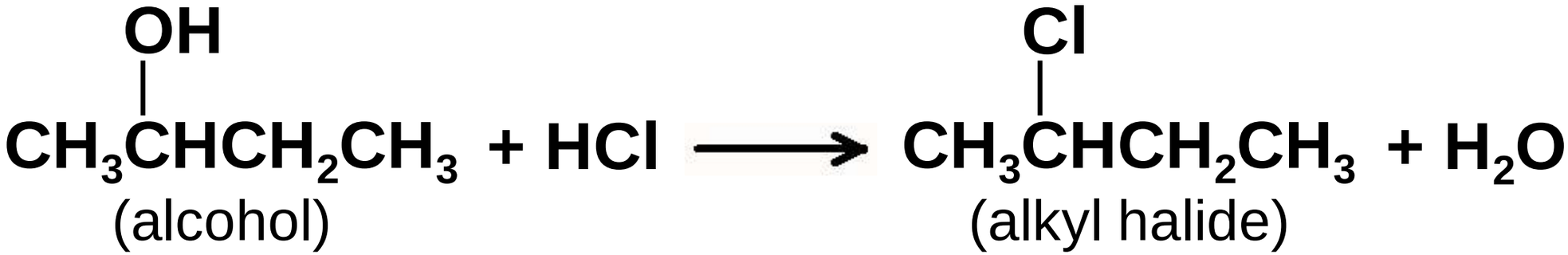
propan-2-ol
(isopropyl alcohol)



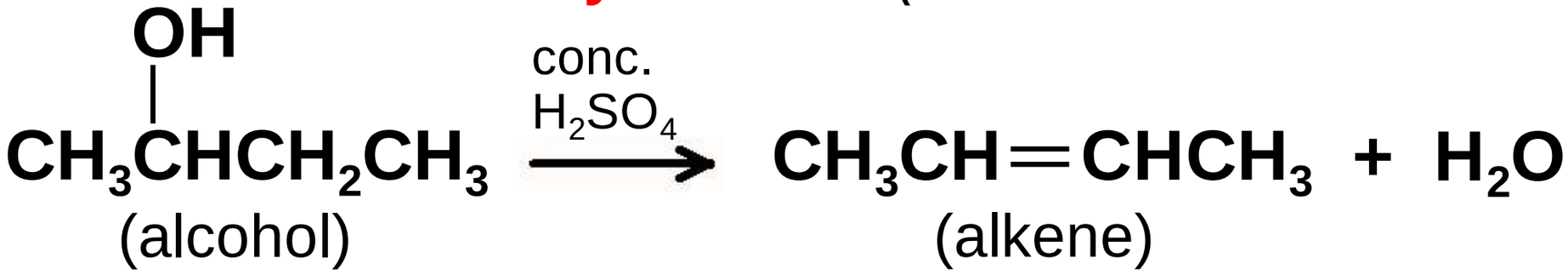
2-methylpropan-2-ol

Reactions: 1. combustion

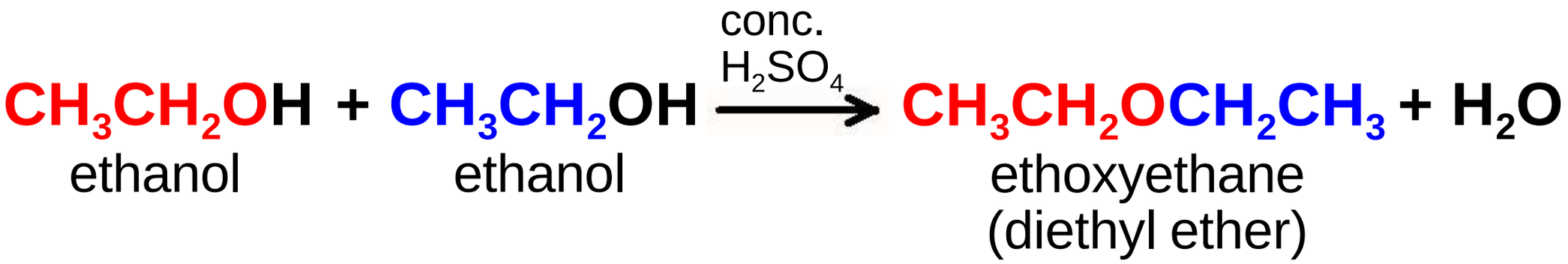
2. substitution



3. dehydration (an elimination reaction)



4. condensation



Ethers

Generic Structure: R—O—R′

Functional Group: alkoxy group (—OR)

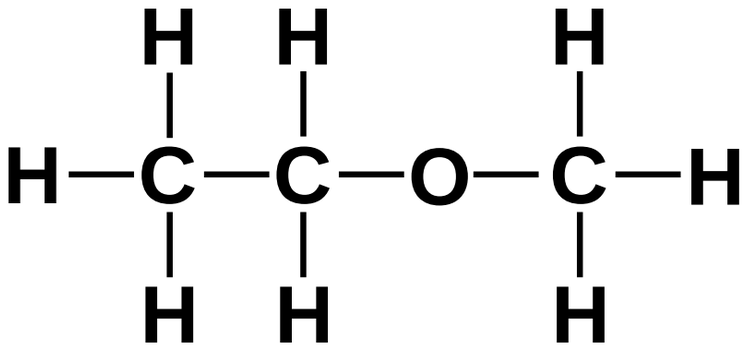
Nomenclature: alkoxy branch

“methoxy-” —OCH_3

“ethoxy-” —OCH_2CH_3

“propoxy-” —$OCH_2CH_2CH_3$

examples



$CH_3CH_2OCH_3$

methoxyethane

$CH_3CH_2OCH_2CH_2CH_2CH_3$

1-ethoxybutane

$CH_3CH_2CH_2O$

$CH_3CH_2CHCH_2CH_2CH_3$

3-propoxyhexane

Reactions: 1. combustion