

Organo sulphur compounds: [4 lectures, 5 marks]

R-SH thioalcohols, R-S-R thioethers, RCHS Thioaldehydes, RCSR' thioketones etc are organo sulphur compounds.

Chemistry of thioalcohols/thiols:

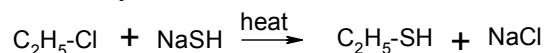
Thioalcohols: these are Sulphur derivatives of corresponding alcohols/ alkylderivatives of Hydrogen sullphide.

Nomenclature:

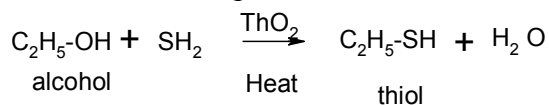
compound	Common names	IUPAC names
R-SH	Alkyl thioalcohol/ alkyl mercaptan	Alkane thiol
CH ₃ -SH	Methyl thioalcohol/ methyl mercaptan	Methane thiol
C ₂ H ₅ -SH	Ethyl thioalcohol /mercaptan	Ethane thiol
$\begin{array}{c} \text{H}_3\text{C}-\text{CH}-\text{SH} \\ \\ \text{CH}_3 \end{array}$	Isopropyl thioalcohol /mercaptan	Propane-2-thiol

Methods of formation:

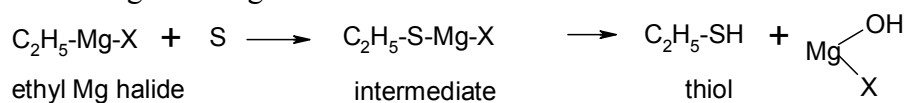
- From alkyl halides:



- From Alcohol: vapours of alcohol and H₂S are passed over heated thoria catalyst.



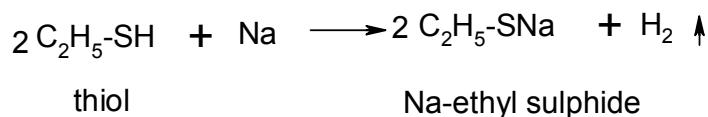
- From Grignard reagent:



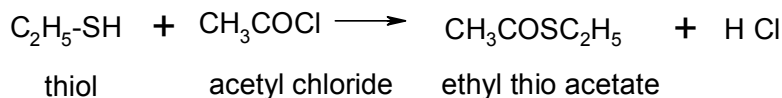
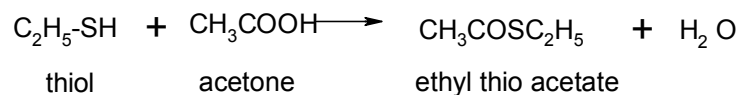
Chemical Properties: S is less electronegative than O, also S has less tendency to form double bond with O hence, shows different chemical properties.

A] Properties similar to alcohols:

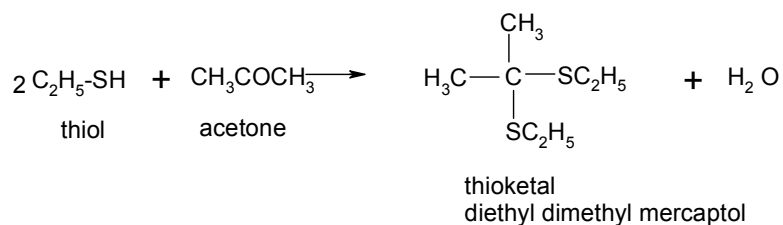
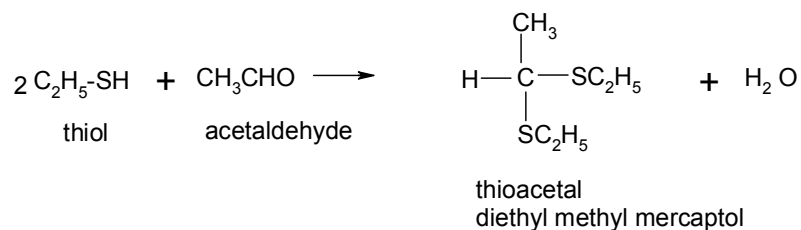
- Reaction with alkali metal:



2. Reaction with carboxylic acid and acid chlorides:

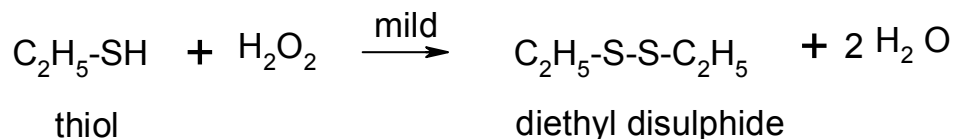


3. Reaction with aldehyde and ketones:

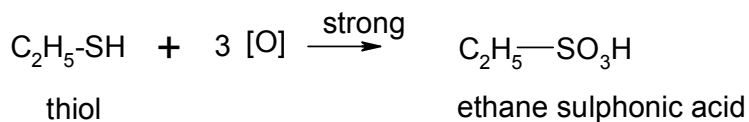


B] Properties different from alcohols:

1. Mild oxidation



2. Strong oxidation.



Chemistry of Thioethers:

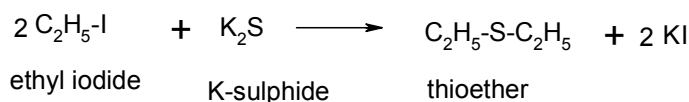
These are Sulphur derivatives of corresponding ethers/ dialkyl derivatives of Hydrogen sullphide

Nomenclature:

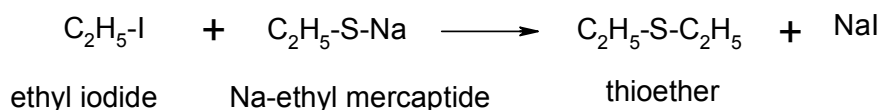
compound	Common names	IUPAC names
R-S-R	diAlkyl thioether	Dialkyl sulphide
CH ₃ -S-CH ₃	dimethyl thioether	Dimethyl sulphide
C ₂ H ₅ -S-C ₂ H ₅	diethyl thioether	Diethyl sulphide

Methods of formation:

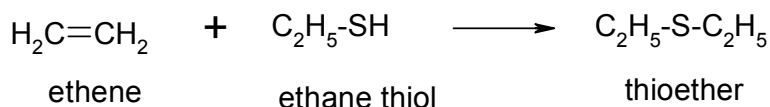
- From alkyl halides



- From thiosalt and alkyl halide:

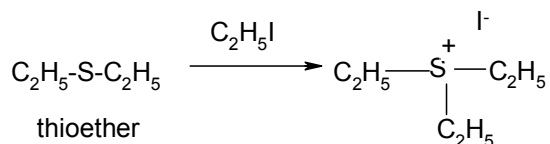


- From thiols and alkenes:

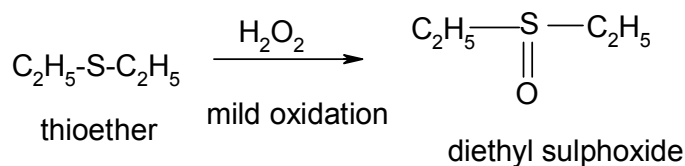


Chemical Properties:

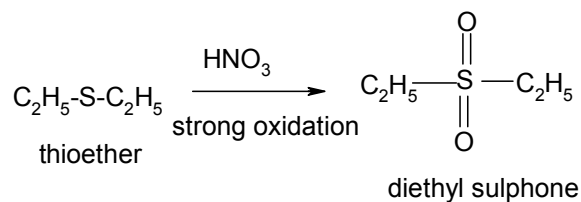
- Reaction with alkyl halide:



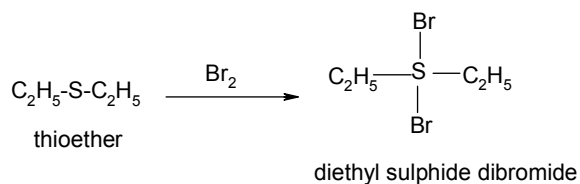
- Mild oxidation



3. Strong oxidation



4. Addition of halogens



5. Hydrolysis

