SILYL ETHERS

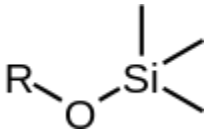
(i) Silyl ethers are a group of chemical compounds which contain a silicon atom covalently bonded to an alkoxy group.

(ii) The general structure is $R^1R^2R^3Si{-}O{-}R^4$ where R^4 is an alkyl group or an aryl group.

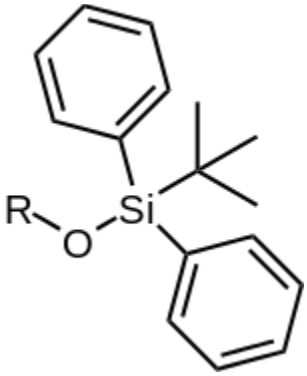
(iii) Silyl ethers are usually used as protecting groups for alcohols in organic synthesis.

(iv) Since $R^1R^2R^3$ can be combinations of differing groups which can be varied in order to provide a number of silyl ethers, this group of chemical compounds provides a wide selectivity for protecting group chemistry.

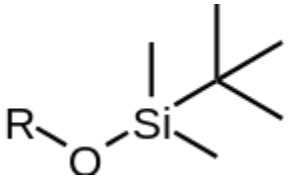
(v) Examples (any 2) : trimethylsilyl ether (TMS),



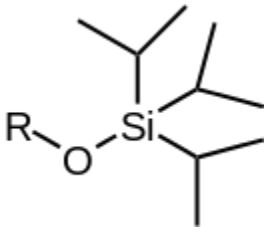
tert-butyldiphenylsilyl ether (TBDPS),



tert-butyldimethylsilyl ether (TBS/TBDMS)



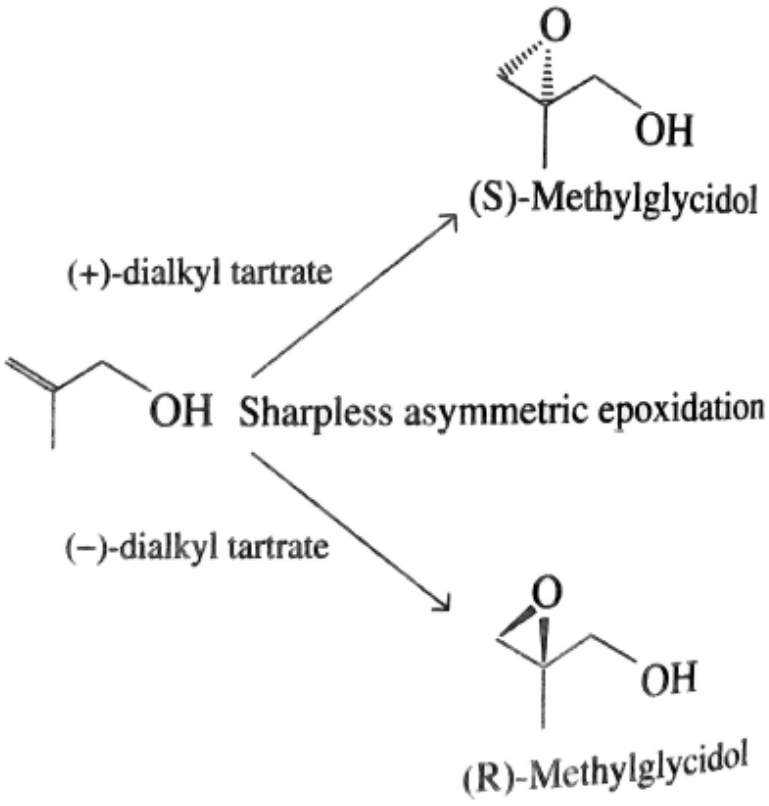
triisopropylsilyl ether (TIPS).



(vi) They are particularly useful because they can be installed and removed very selectively under mild conditions.

SHARPLESS ASYMMETRIC EPOXIDATION

This is a method of converting allylic alcohols to chiral epoxy alcohols with very high enantioselectivity. Enantioselective means the preference of one enantiomer (R or S) rather than formation of racemic mixture (mixture of R and S)



PREPARATION OF ALCOHOLS

OXYMERCURATION

The oxymercuration reaction is an electrophilic addition organic reaction that transforms an alkene into a neutral alcohol. The alkene reacts with mercuric acetate (AcO–Hg–OAc) in aqueous solution to yield the addition of an acetoxymercury (HgOAc) group and a hydroxy (OH) group across the double bond. Carbocations are not formed in this process and thus rearrangements are not observed.

(i) The reaction follows Markovnikov's rule (the hydroxy group will always be added to the more substituted carbon)

(ii) It is an anti addition (the two groups will be trans to each other).