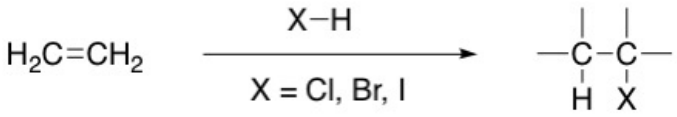
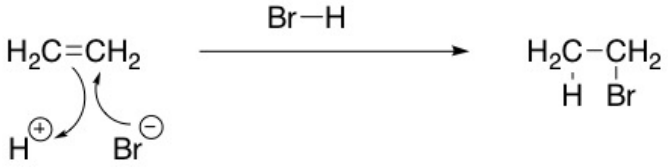
Addition Reactions

Hydrogen Halide (H-X)

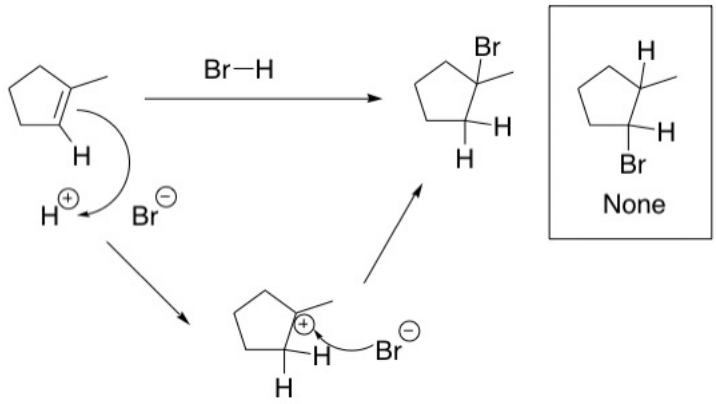


Reaction generally leads to syn/cis addition

Example 1: Ethylene



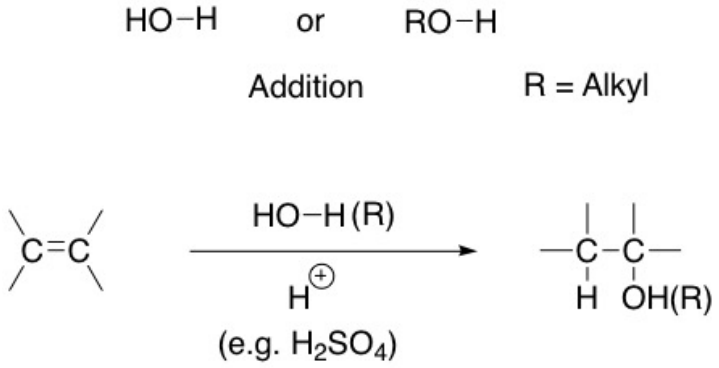
Example 2: 1-Methylcyclopent-1-ene



-Markovnikov addition

RECALL: Carbocation stability 3º > 2º > 1º > CH_3^+

Hydration and ether formation

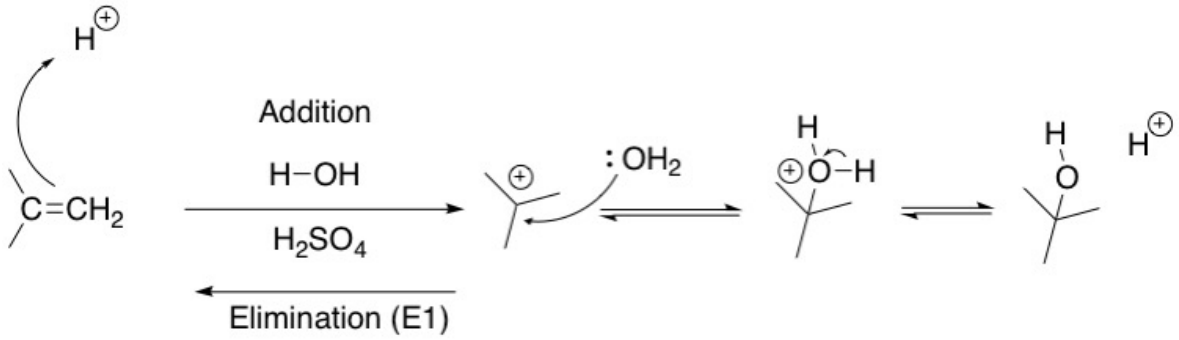


Not Stereospecific

Examples

Hydration formation

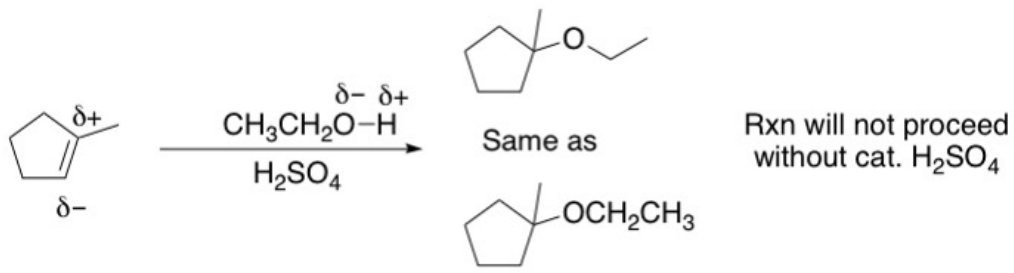
Ex #1)



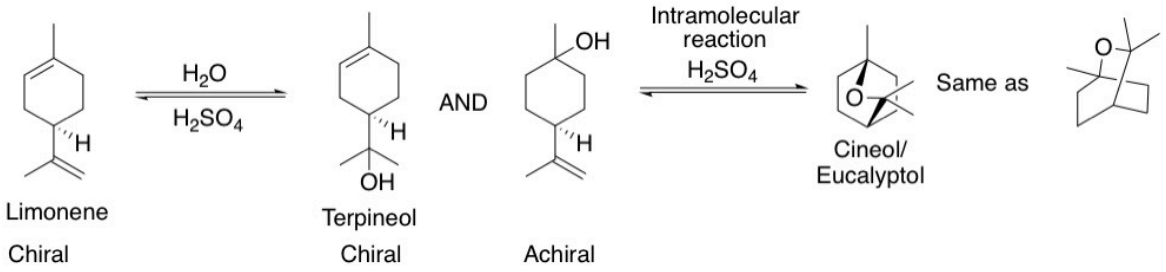
H_2SO_4 (H^+) is a catalyst, meaning that it is not transformed or used up in the reaction but is present to lower the activation energy.

Ether formation

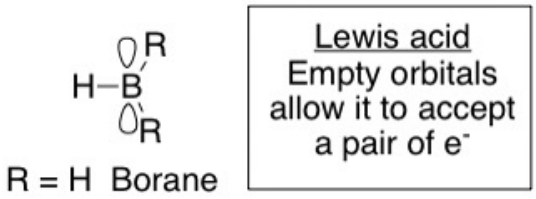
Ex #1)

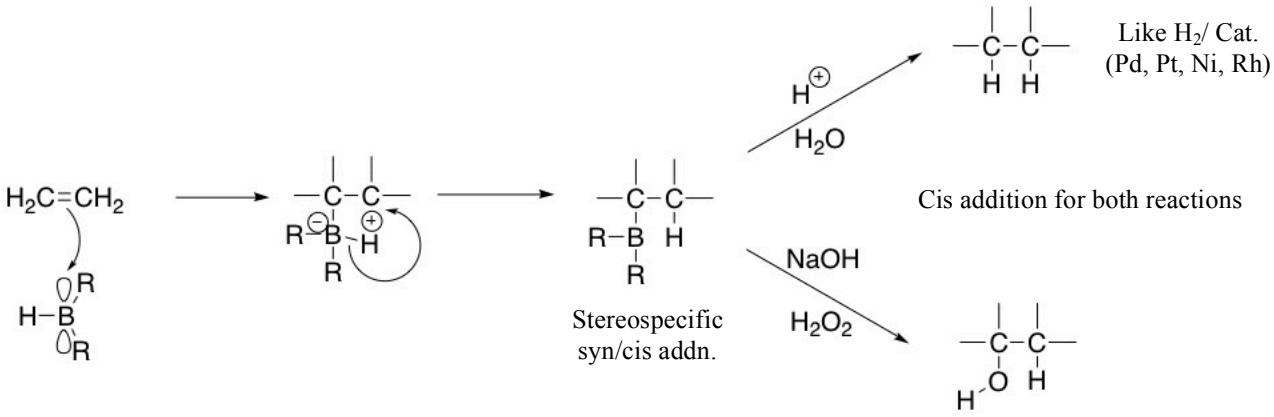


Ex #2)



Hydroboration



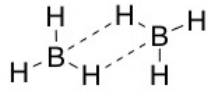


Structure of borane

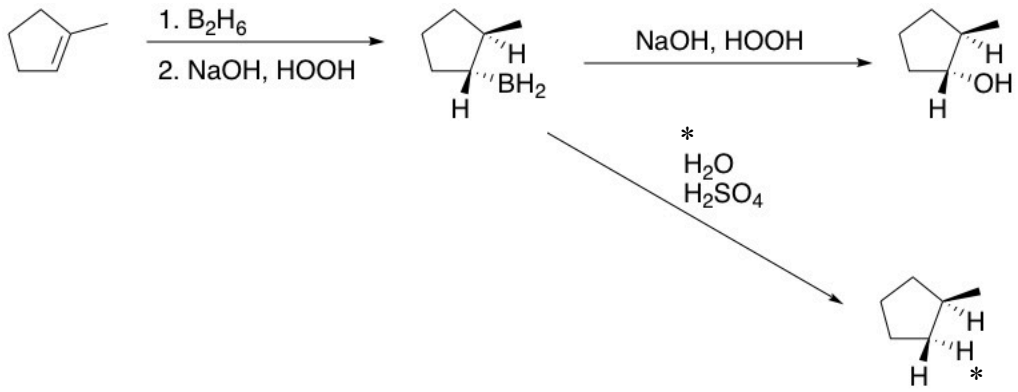
Exists as Diborane (B_2H_6), but behaves like BH_3

Borane BH_3

Diborane



Example

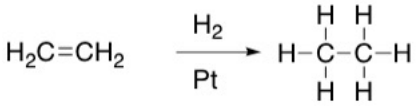


Syn addition, but anti-Markovnikov add'n of OH

Oxidation and reduction reactions

Reduction adds electrons
Oxidation removes electrons

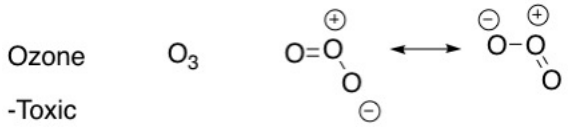
Reduction Reaction

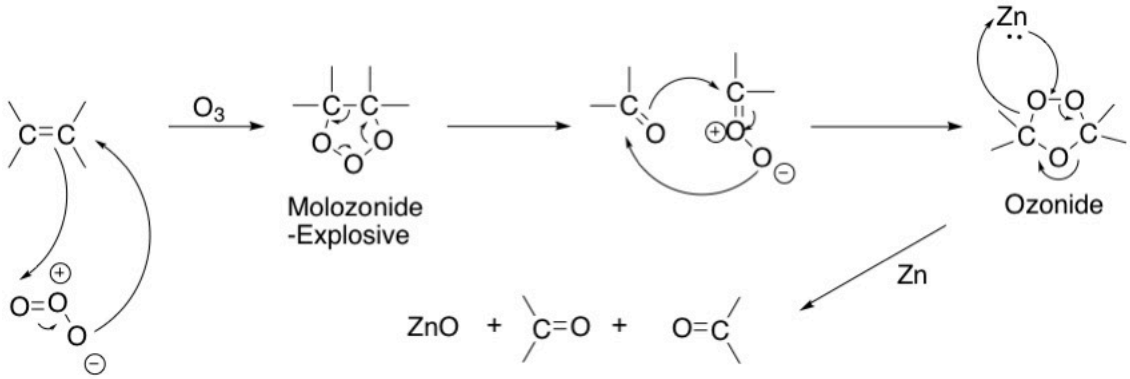


12 e^- outer shell 14 e^- outer shell

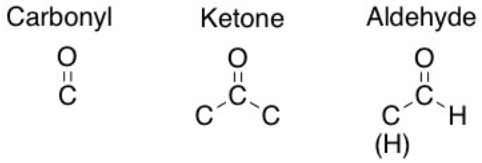
As there is an increase in the electron count in the outer shell, this is a reduction of ethylene.

Ozonolysis (lysis = cleavage)

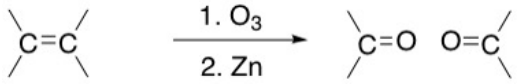




Examples of carbonyl groups



Reaction scheme of ozone



Example