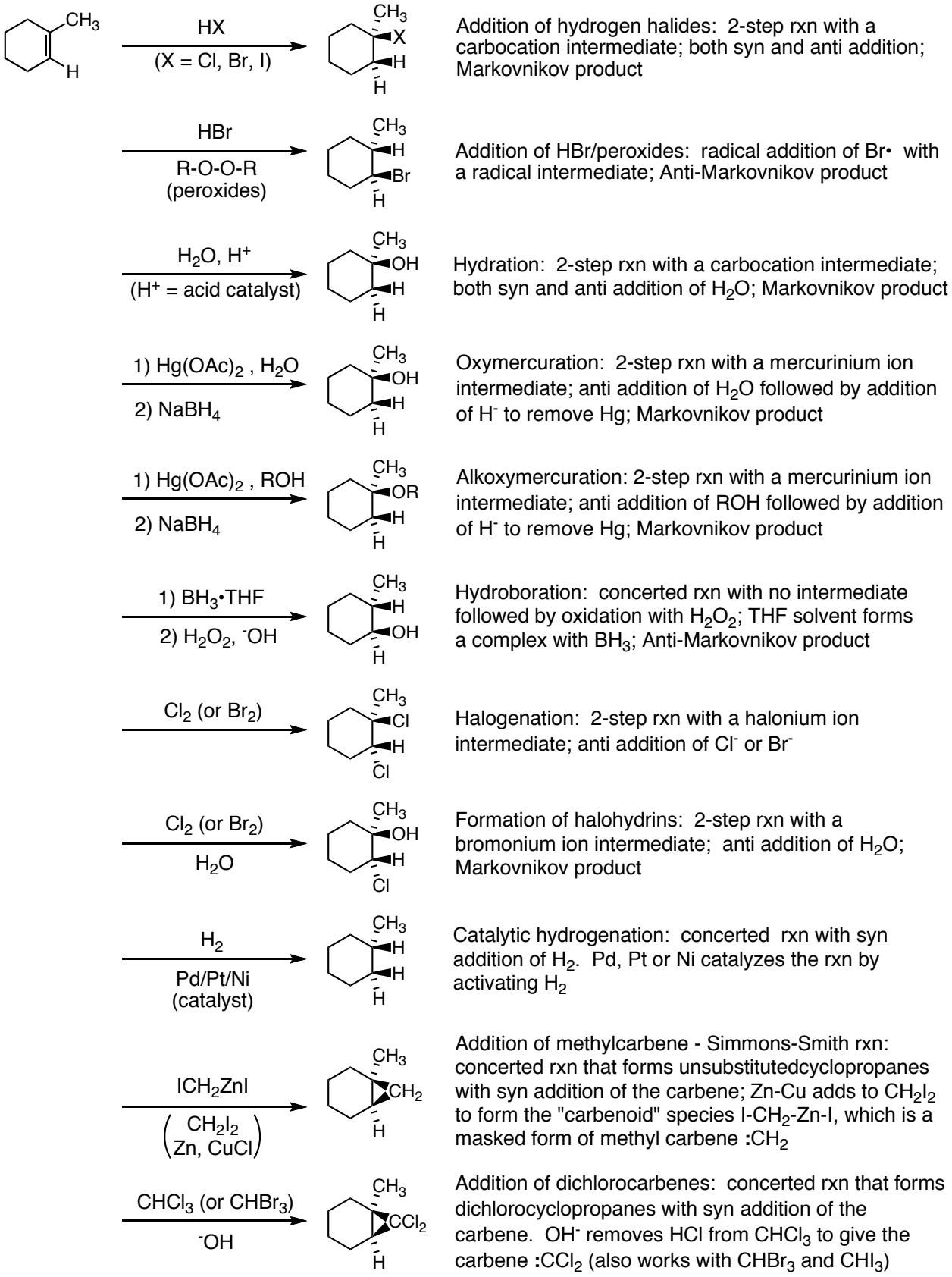
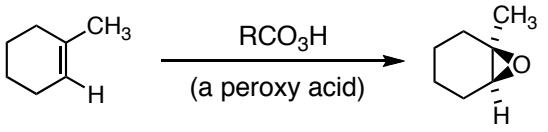
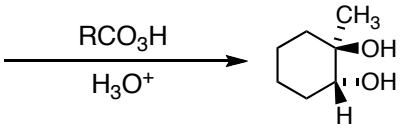
Ch. 8: Summary of Reactions of Alkenes

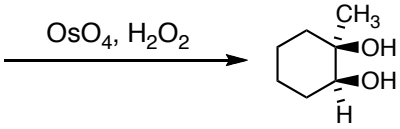




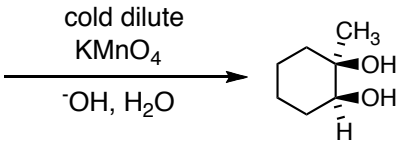
Epoxidation: concerted rxn with syn addition of O; requires a peroxy acid such as MCPBA



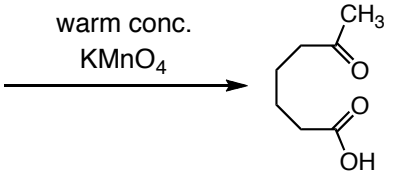
Anti hydroxylation: epoxidation followed by ring opening of the epoxide by acid-catalyzed hydrolysis with aqueous acid



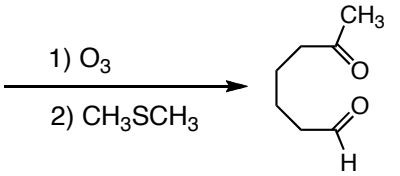
Syn hydroxylation: 2-step rxn with syn addition of OsO_4 to form an osmate ester followed by oxidation with H_2O_2



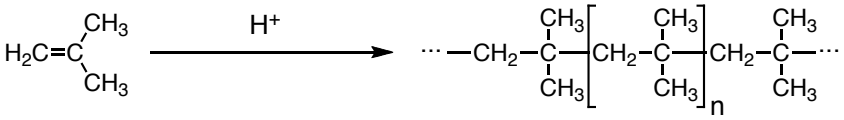
Syn hydroxylation: 2-step rxn with syn addition of $KMnO_4$ to form an permanganate ester followed by hydrolysis with ^-OH



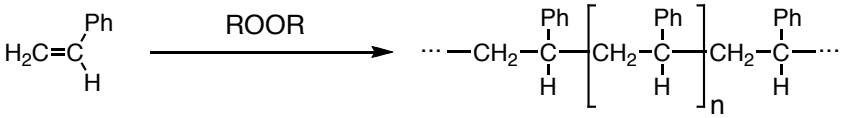
Oxidative cleavage with $KMnO_4$: concerted rxn; all C=C bonds and H atoms on C=C carbon atoms are oxidized.



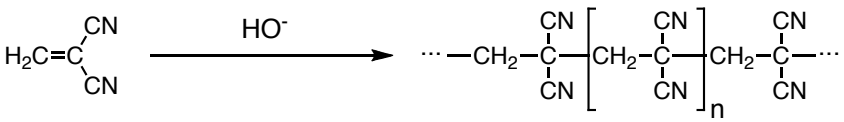
Ozonolysis (oxidative cleavage): 2-step rxn with formation of an ozonide followed by reduction with dimethylsulfide; all C=C bonds are oxidized but not H atoms on C=C carbon atoms.



Cationic polyerization: e^--rich alkene reacts with H^+ (initiation), alkenes add repeatedly to carbocation (propagation), H^+ eliminates (termination)

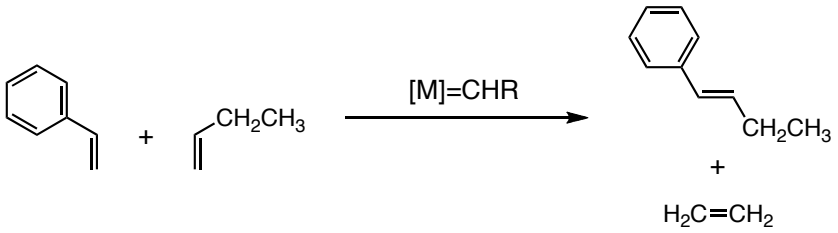


Radical polyerization: alkene reacts with RO• (initiation), alkenes add repeatedly to carbon radical (propagation), radicals combine (termination)

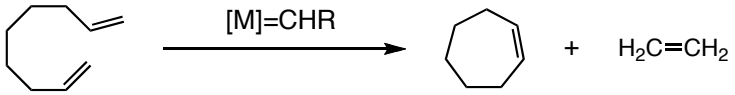


Anionic polyerization: e^--poor alkene reacts with HO^- (initiation), alkenes add repeatedly to carbanion (propagation), carbanion deprotonates water to form HO^- (termination)

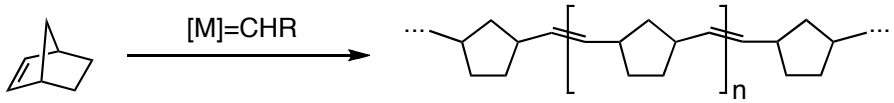
Ch. 8: Summary of Reactions of Alkenes (cont.)



Cross Metathesis



Ring-Closing Metathesis



Ring-Opening Polymerization Metathesis