

Reactions of Alkenes

<u>Product</u>		<u>Type of Reaction (name)</u>	<u>Reaction Conditions</u>	<u>Regiochemistry</u>	<u>Stereochemistry</u>
Alkanes	(Ch. 6.1-6.3)	<u>Reduction (Addition)</u> catalytic hydrogenation	H ₂ , Pd (C), solvent		Syn stereochemistry
Halides	(Ch 6.4-6.7)	<u>Electrophilic Addition</u>	HX, organic solvent (anhydrous)	Markovnikov Addition	No stereochemical pref.
	(Ch. 6.8)	<u>Radical Chain</u> radical addition	HBr, H ₂ O ₂ , hv	Anti-Markovnikov	No stereochemical pref.
Alcohol (hydration)	(Ch. 6.10-6.11)	<u>Electrophilic Addition</u> oxymmercuration	H ₃ O ⁺ 1. Hg(OAc) ₂ , H ₂ O, THF	Markovnikov Addition	No stereochemical pref.
	(Ch. 6.12-6.14)	hydroboration	2. NaBH ₄ 1. BH ₃ , THF 2. H ₂ O ₂ , NaOH, H ₂ O	Markovnikov Addition	No stereochemical pref.
				Anti-Markovnikov	Syn Stereochemistry
Dihalides	(Ch. 6.15-6.17)	<u>Electrophilic Addition</u>	Cl ₂ , Br ₂ , or I ₂ in CCl ₄ solvent	Markovnikov-like halonium ion intermediate	Anti stereochemistry
Halohydrin	(Ch. 6.18)	<u>Electrophilic Addition</u>	X ₂ in H ₂ O (X=Cl, Br, I)	Markovnikov-like halonium ion intermediate	Anti stereochemistry
Epoxide (Epoxidation)	(Ch. 6.19)	Oxidation (Addition)	H ₃ CCO ₃ H (peroxyacetic acid)		Syn addition
Carbonyls	(Ch. 6.20)	<u>Oxidative Cleavage</u> Ozonolysis	1. O ₃ 2. Zn,	(Cleavage of alkenes only to give aldehydes and/or ketones)	
Cyclopropanes	(Ch. 14.3)	<u>Electrophilic Addition</u>	CHCl ₃ , NaOH		Syn addition
	(Ch. 14.12)	Simmons-Smith Reaction	CH ₂ I ₂ , Zu(Cu)		Syn addition
1,2-Diols (vic-diols, glycols)	(Ch. 15.5)	<u>Oxidation (Addition)</u> (dihydroxylation)	1. OsO ₄ , (H ₃ C) ₃ COOH		Syn addition