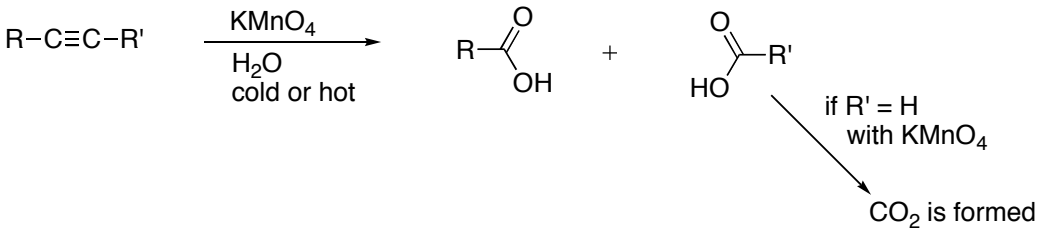
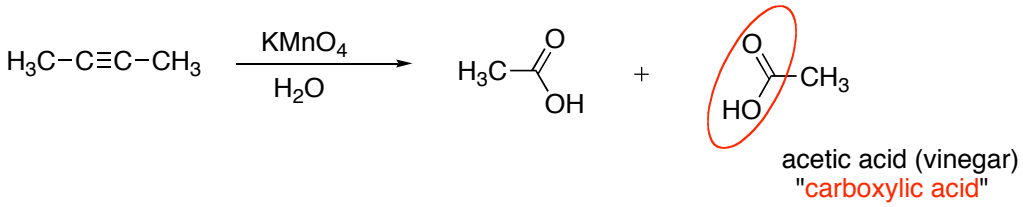
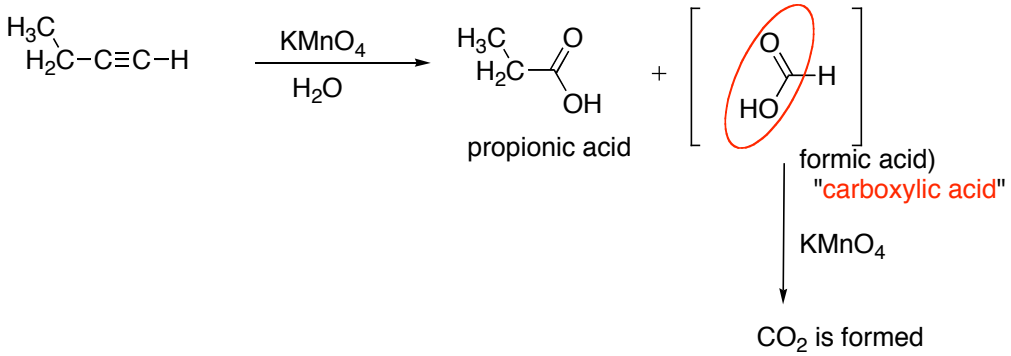
Oxidation of alkynes:



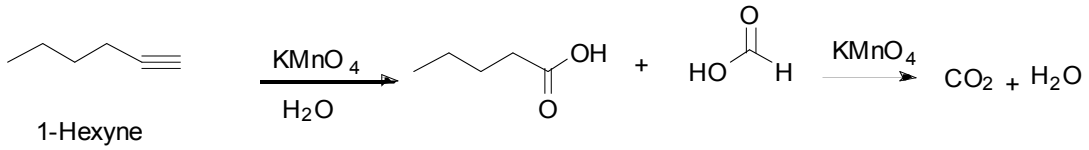
eg.
i)



ii)

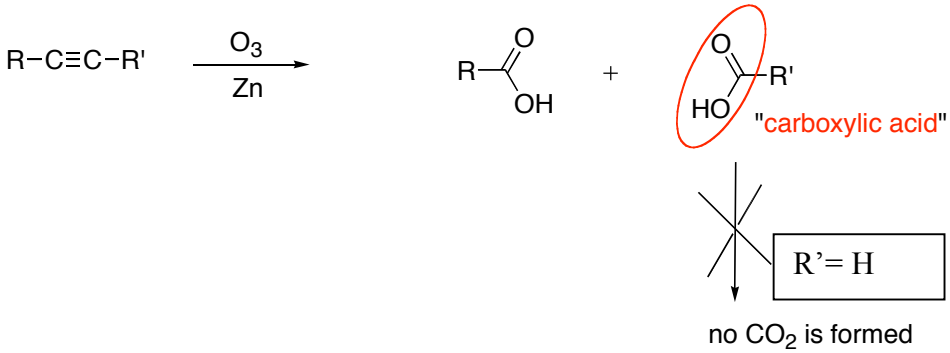


NOTE: do not need to worry about the mechanism of this reaction

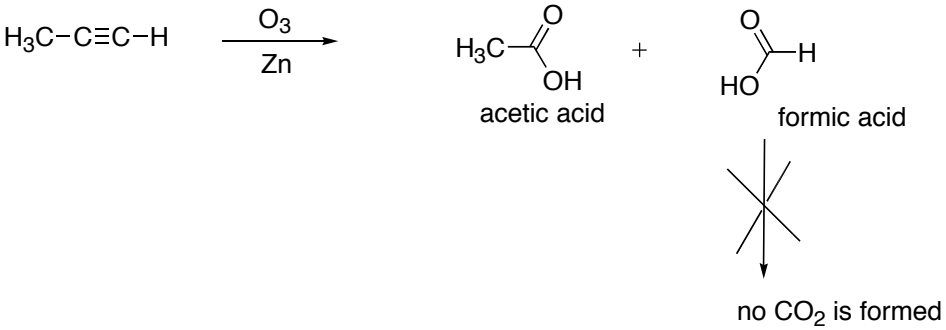


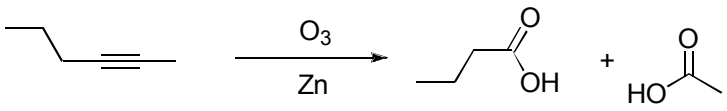
1-Hexyne

Ozonolysis of alkynes:



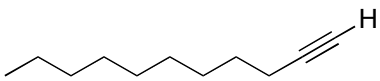
i.



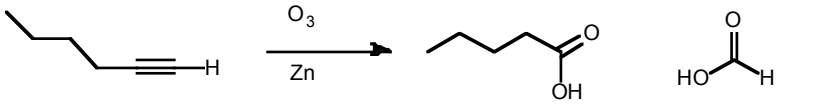


Reactions of terminal alkynes: {R−C≡C−H }

eg.

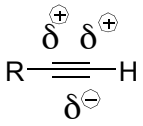


1-undecyne

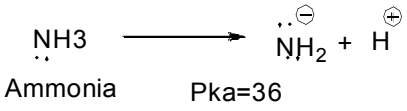


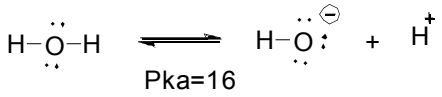
Formic Acid

- acidity of alkane / alkene / alkyne:

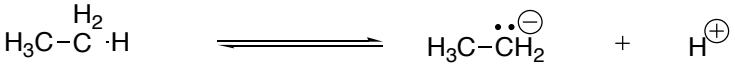


$Pk_a = 26$





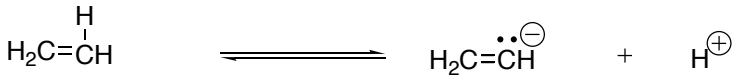
i.



$$Ka = \frac{[CH_3CH_2^-][H^+]}{[CH_3CH_3]} = 10^{-46}$$

pKa = 46

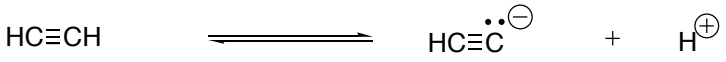
ii.



$$Ka = \frac{[CH_2CH^-][H^+]}{[CH_2CH_2]} = 10^{-36}$$

pKa = 36

iii.



$$Ka = \frac{[HC\equiv C^-]\,[H^+]}{[HC\equiv CH]} = 10^{-26}$$

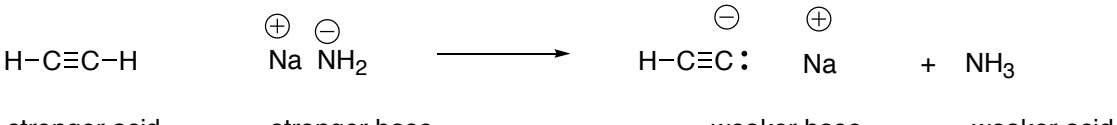
pKa = 26

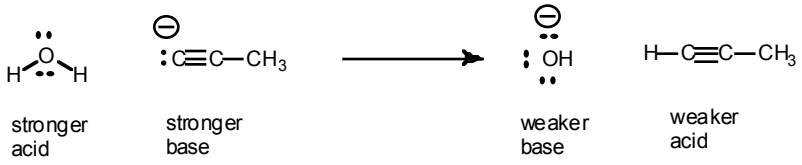
- How strong a base needed?

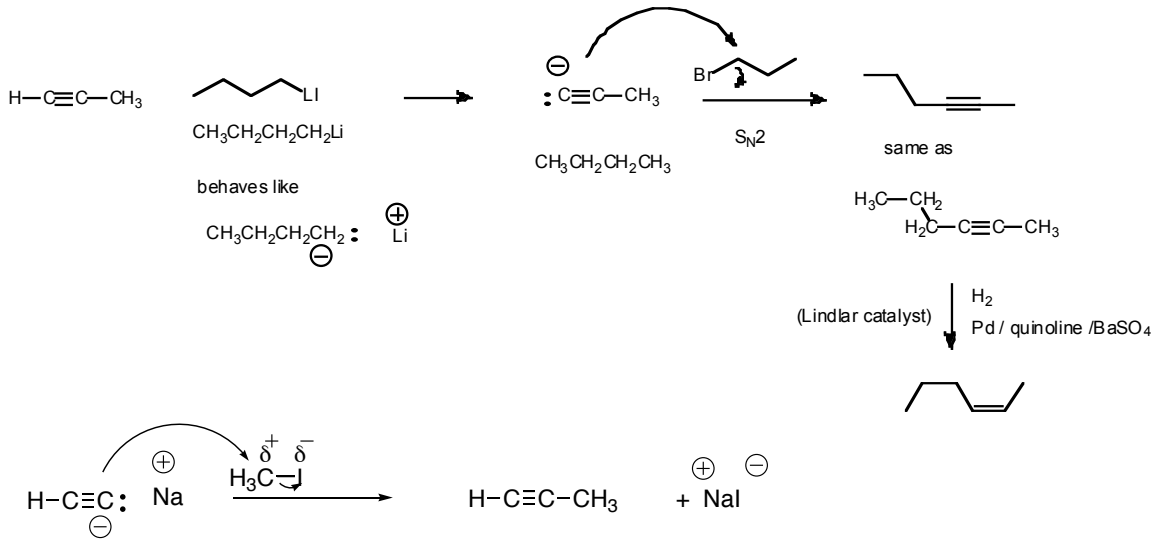
	acid		conjugate base
$HC\equiv C-H$	H_2N-H	pKa ~ 36	H_2N^-
pKa = 26	H_3C-H	pKa ~ 45	H_3C^-
	HO-H	pKa ~ 15.7	HO^-

- only H_2N^- and H_3C^- are strong enough bases to deprotonate the proton of the alkyne.

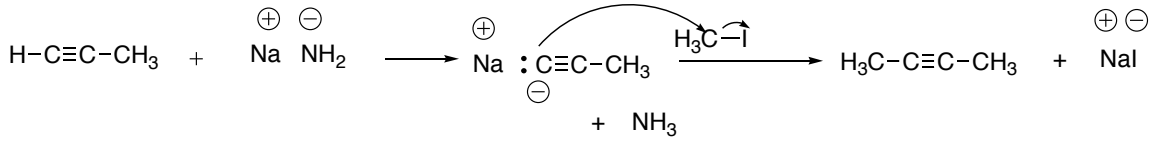
Reactions of terminal acetylenes with alkyl halide (carbon-carbon bond formation):







- nucleophilic substitution reaction (S_N2)



- reaction with primary halides (Cl, Br, I)

Nucleophile – seeks positive charge
Electrophile – seeks negative charge

Acetylenes are key intermediates for making other types of compounds: