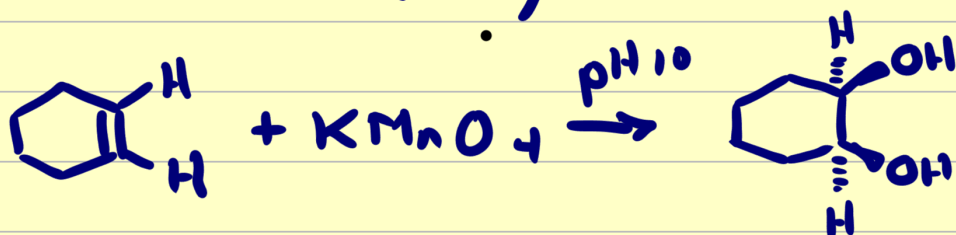
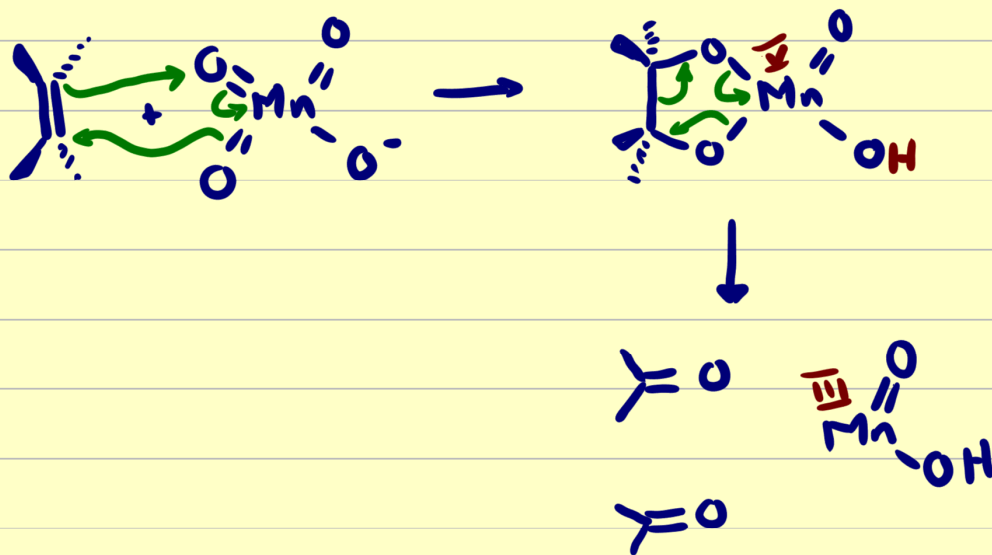
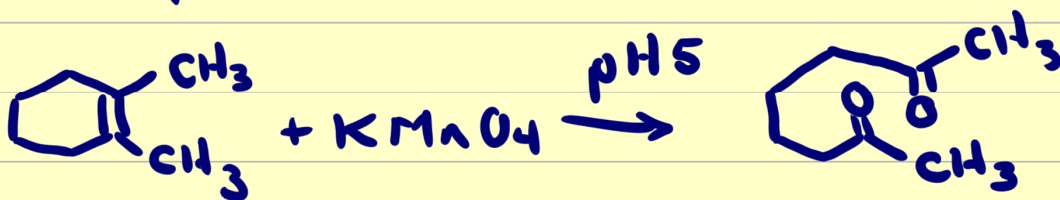


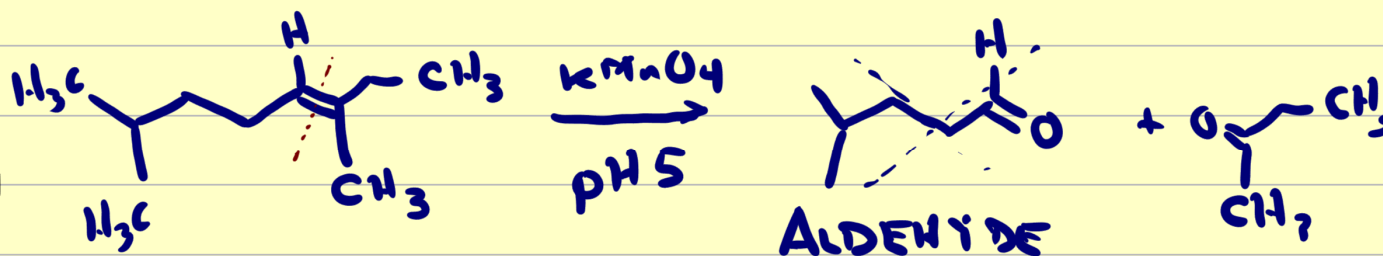
# ALKENE OXIDATIONS.

## 1) $\text{KMnO}_4$ (BASIC)



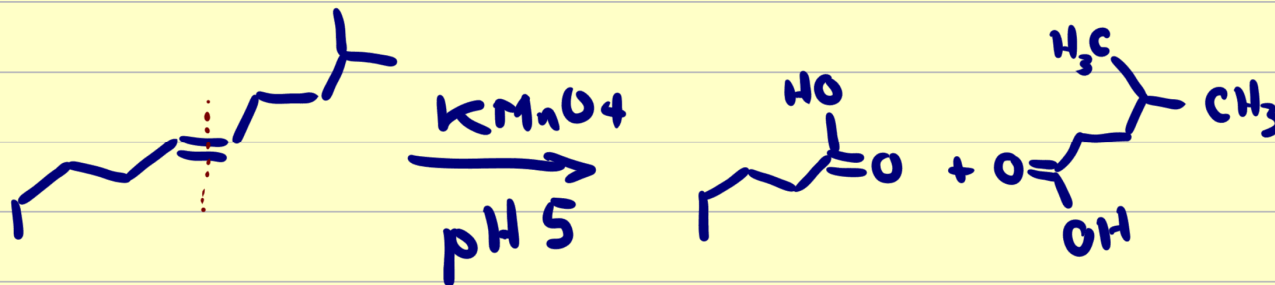
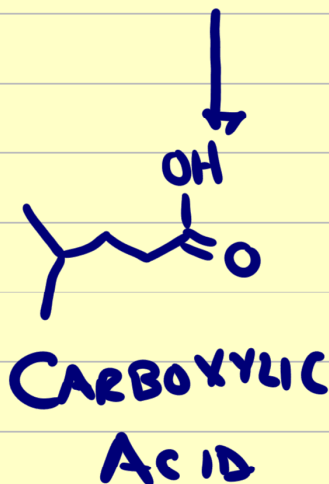
## 2) $\text{KMnO}_4$ (ACIDIC OR NEUTRAL)





OXIDIZED UNDER THESE CONDS

You don't get an aldehyde under acidic KMnO<sub>4</sub> conditions, because it's immediately oxidized to the carboxylic acid

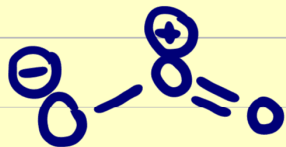


## OTHER REAGENTS MORE COMMONLY USED

KMnO<sub>4</sub> BASIC  $\Rightarrow$  OsO<sub>4</sub> MORE COMMON  
 KMnO<sub>4</sub> ACIDIC  $\Rightarrow$  Na<sub>2</sub>WO<sub>4</sub>  
 Na<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> - MORE COMMON

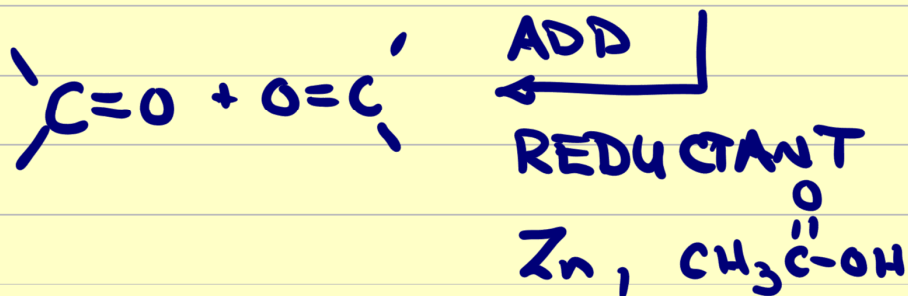
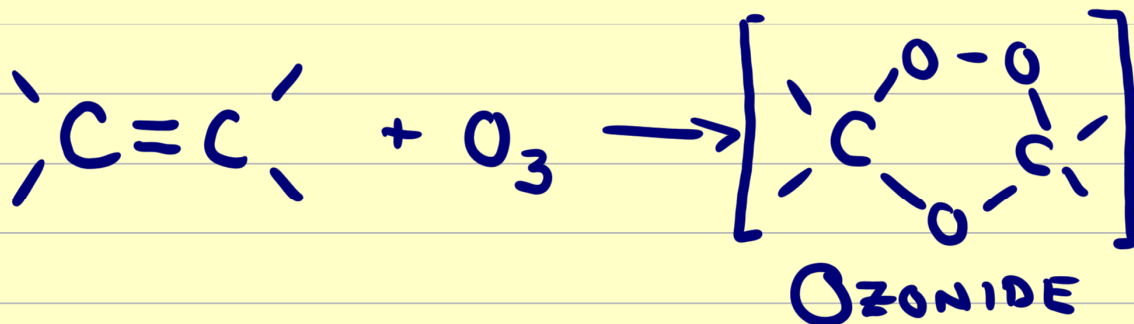
OZONE  $O_3$

- WHAT IF YOU WANT AN ALDEHYDE

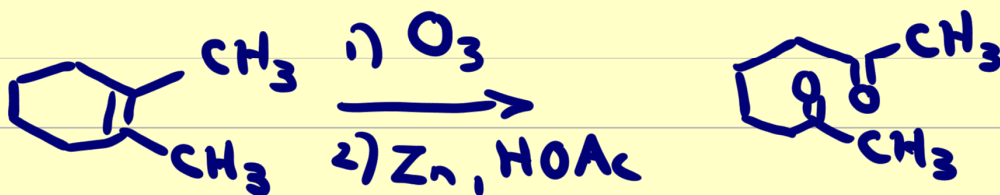
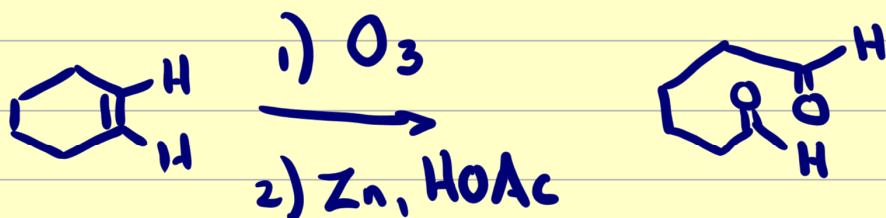
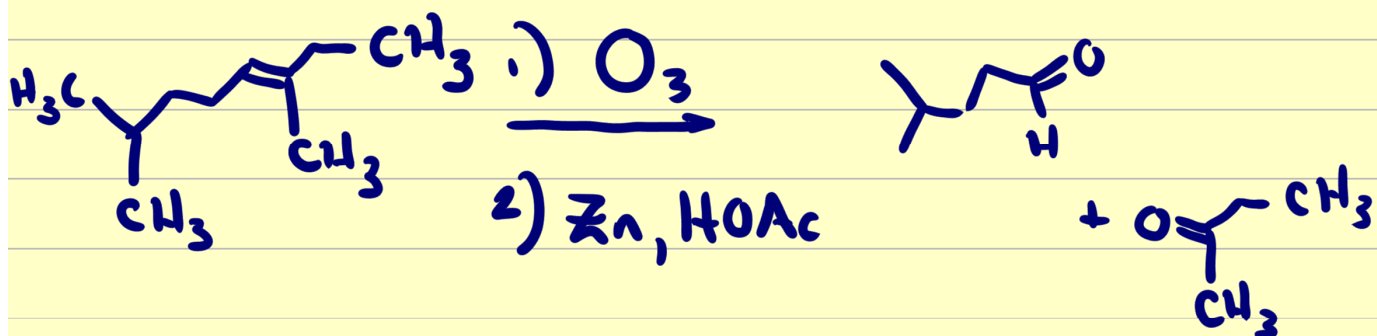


INCREDIBLY REACTIVE  
OXIDANT

IMMEDIATELY CLEAVES BOTH THE  $\pi$  AND  
 $\sigma$  BONDS OF A DOUBLE BOND



SINCE CARBONYLS THEMSELVES ARE  
NOT FORMED UNTIL ALL OXIDANT  
IS GONE, 'YOU' CAN GET ALDEHYDES



## ALKYNES.

- THEY DO ELECTROPHILIC ADDN. RXNS, PRETTY MUCH LIKE ALKENES, BUT MORE SLOWLY.

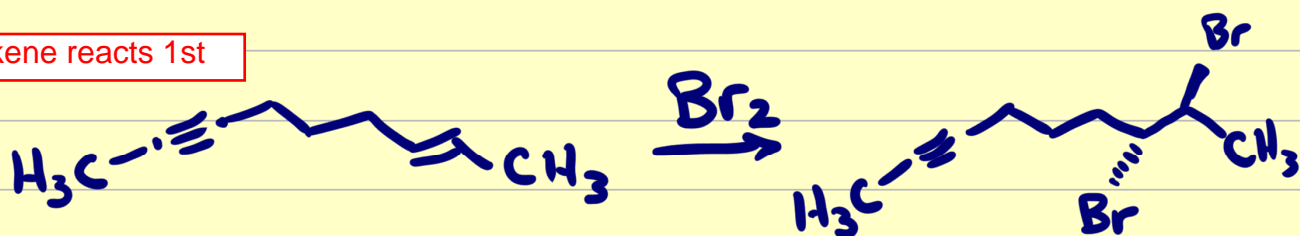
- REASON -  $sp$  CARBONS HAVE  $e^-$  DENSITY HELD MORE CLOSELY TO NUCLEUS THAN  $sp^2$  CARBONS

- ≡ MORE ELECTRONEGATIVE

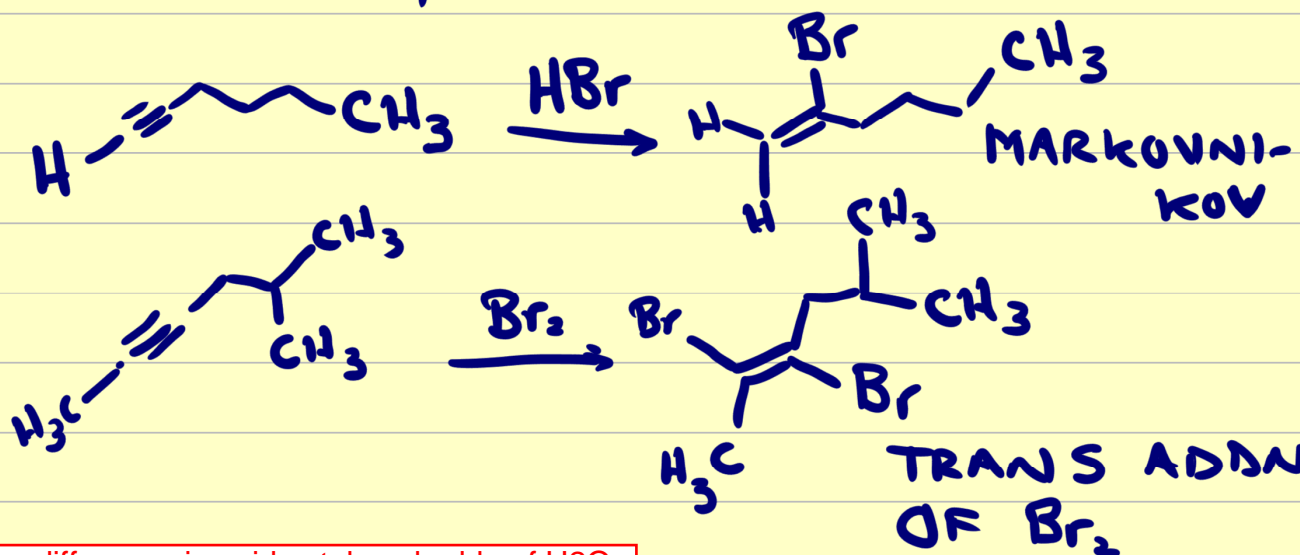
∴ LESS WILLING TO DONATE e<sup>-</sup>'S

IN ELECTROPHILIC ADDN RXN.

alkene reacts 1st



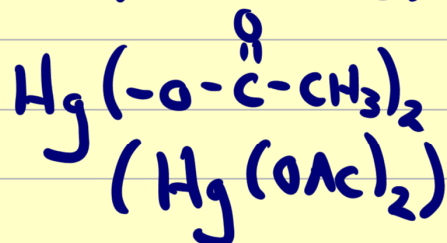
OTHER WISE, CHEMISTRY IS ANALOGOUS



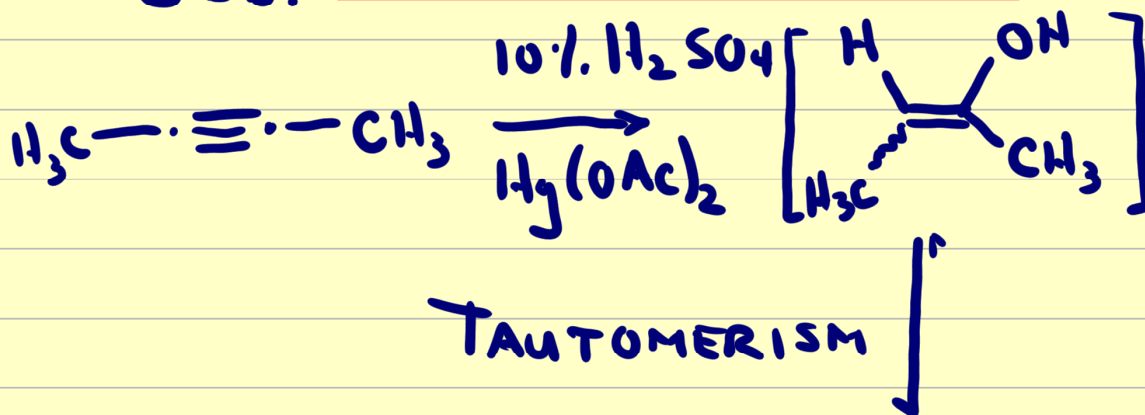
One difference in acid catalyzed addn of H<sub>2</sub>O

ADDN OF H<sub>2</sub>O + H<sub>2</sub>SO<sub>4</sub> - TOO SLOW.

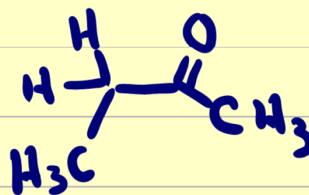
- NEEDS Hg<sup>2+</sup> SALT



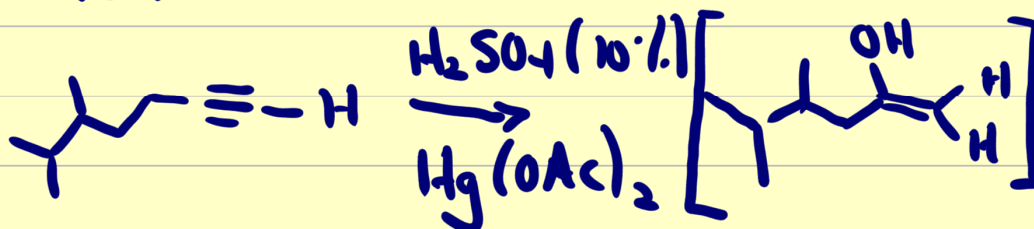
CHANGES MECH., BUT PRODUCT IS ODD. (or at least different from alkene addn product)



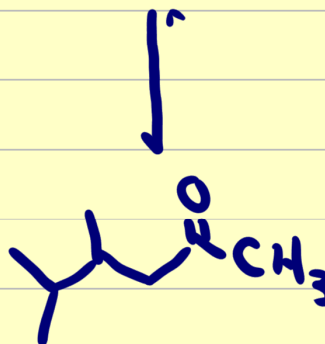
The equilibrium constant for this 'tautomerism' is about 1000000:1 in favour of the ketone - so that's all you see



USUALLY USED FOR 1-ALKYNES



GET A  
METHYL  
KETONE



best in these cases because Markovnikov addn means only one product is obtained