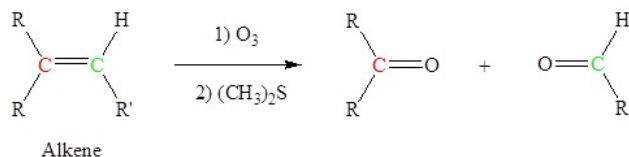


## 19.3: REVIEW OF KETONE AND ALDEHYDE SYNTHESIS

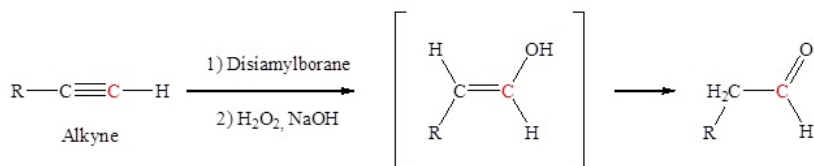
So far this text has discussed aldehyde and ketone synthesis from the ozolysis of alkenes, hydration of alkynes, oxidation of alcohols, and Friedel-Crafts acylation of benzene rings.

### ALKENES CAN BE CLEAVED USING OZONE (O<sub>3</sub>) TO FORM ALDEHYDES AND/OR KETONES



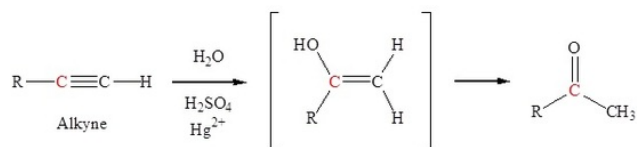
### HYDRATION OF AN ALKYNE TO FORM ALDEHYDES

Anti-Markovnikov addition of a hydroxyl group to an alkyne forms an aldehyde. The addition of a hydroxyl group to an alkyne causes tautomerization which subsequently forms a carbonyl.

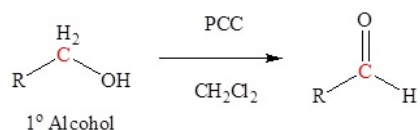


### HYDRATION OF AN ALKYNE TO FORM KETONES

The addition of a hydroxyl group to an alkyne causes tautomerization which subsequently forms a carbonyl. Markovnikov addition of a hydroxyl group to an alkyne forms a ketone.

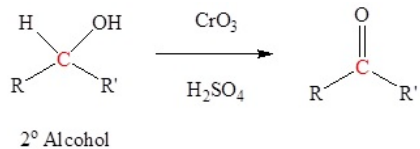


### OXIDATION OF 1° ALCOHOLS WITH PCC TO FORM ALDEHYDES

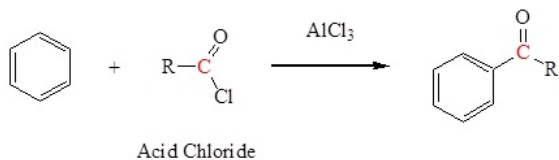


### OXIDATION OF 2° ALCOHOLS TO FORM KETONES

Typically uses Jones reagent (CrO<sub>3</sub> in H<sub>2</sub>SO<sub>4</sub>) but many other reagents can be used

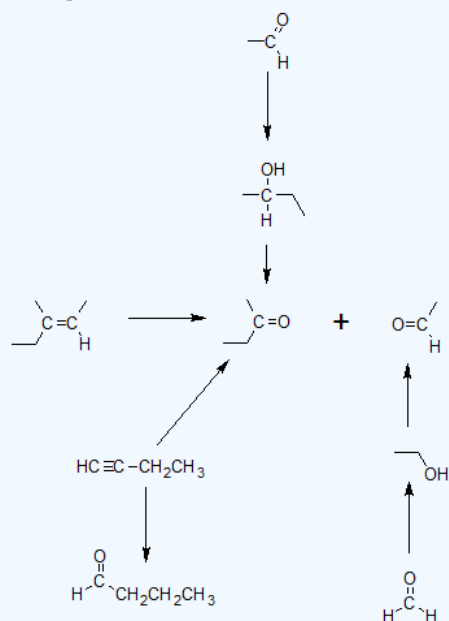


### FRIEDEL-CRAFTS ACYLATION TO FORM A KETONE



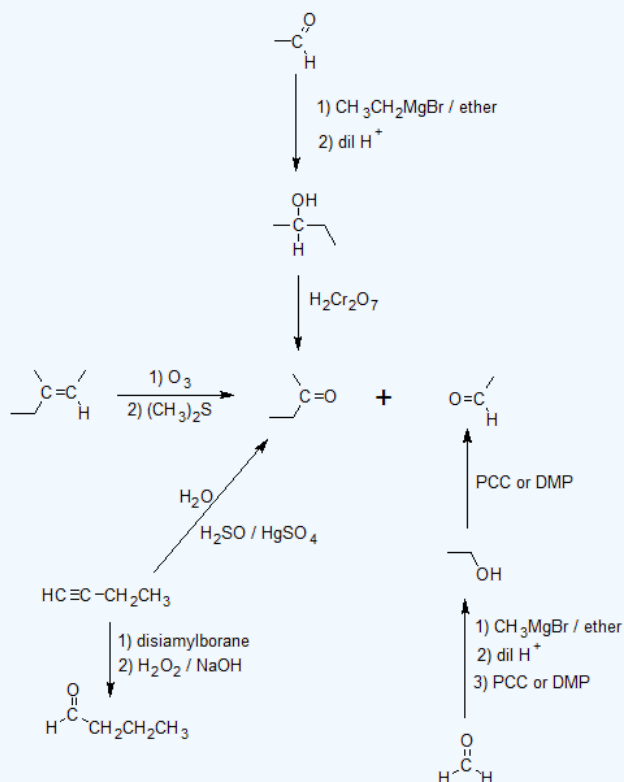
## Exercise

2. Specify the reagents to complete the reaction map below.



Answer

2.



## CONTRIBUTORS AND ATTRIBUTIONS

- Dr. Dietmar Kennepohl FCIC (Professor of Chemistry, [Athabasca University](#))
- Prof. Steven Farmer ([Sonoma State University](#))

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