

## ORGANIC CHEMISTRY 2 LECTURE GUIDE 2019

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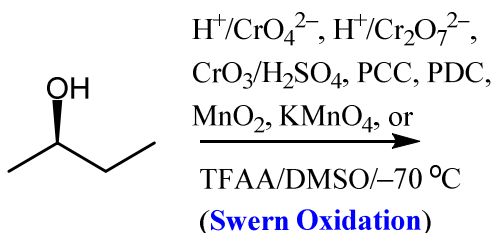
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## Lesson VI.2. Review: Preparation of Carbonyls from Alcohols, Alkynes and Alkenes

### *Preparation of carbonyls from alcohols*

We have seen several ways to make carbonyl-containing functional groups. One way is to oxidize an alcohol:



PCC = pyridinium chlorochromate, PDC = pyridinium dichromate, TFAA = trifluoroacetic anhydride,  $\text{CF}_3\text{C}(\text{O})_2\text{O}$ .

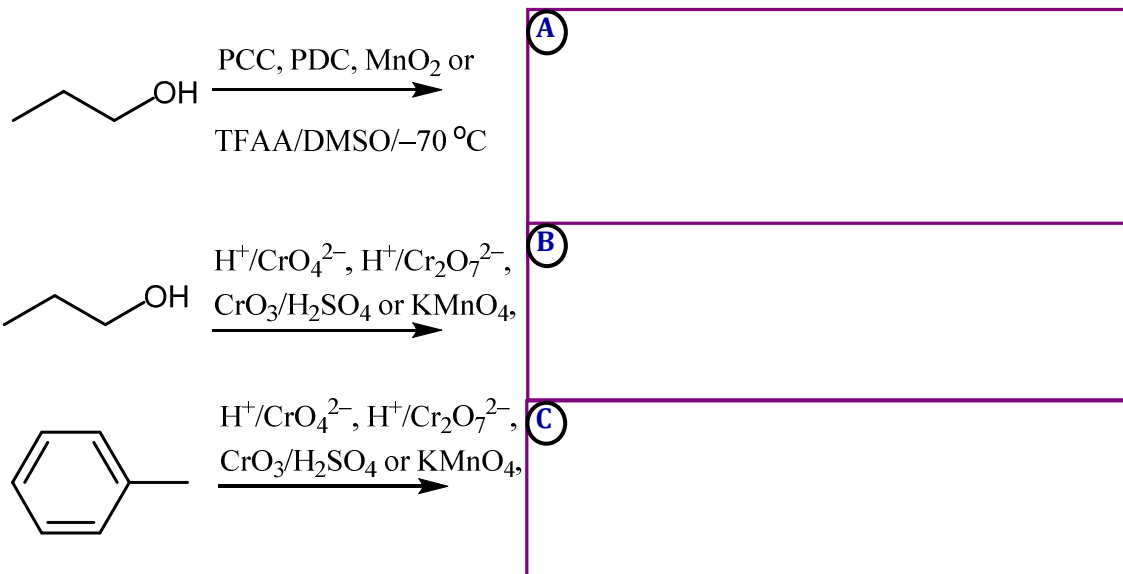
The secondary alcohols are oxidized to ketones by all of these reagents.

Notes

## Lesson VI.2. Review: Preparation of Carbonyls from Alcohols, Alkynes and Alkenes

### Preparation of carbonyls from alcohols

Alcohols or benzylic alkyl group can be oxidized:



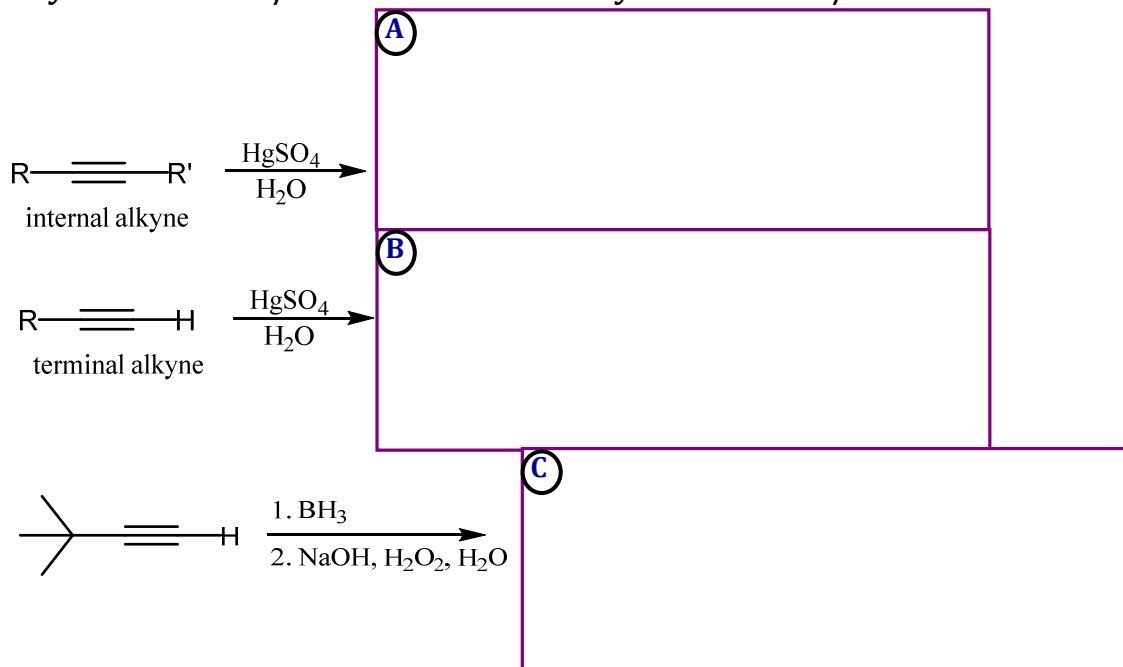
Primary alcohols can be used as precursors for aldehydes **or** carboxylic acids, depending on the oxidizing agents used.

### Notes

## Lesson VI.2. Review: Preparation of Carbonyls from Alcohols, Alkynes and Alkenes

### *Preparation of carbonyls from alkynes*

Carbonyl functional groups can be made from alkynes by oxymercuration/demercuration or hydroboration/oxidation:

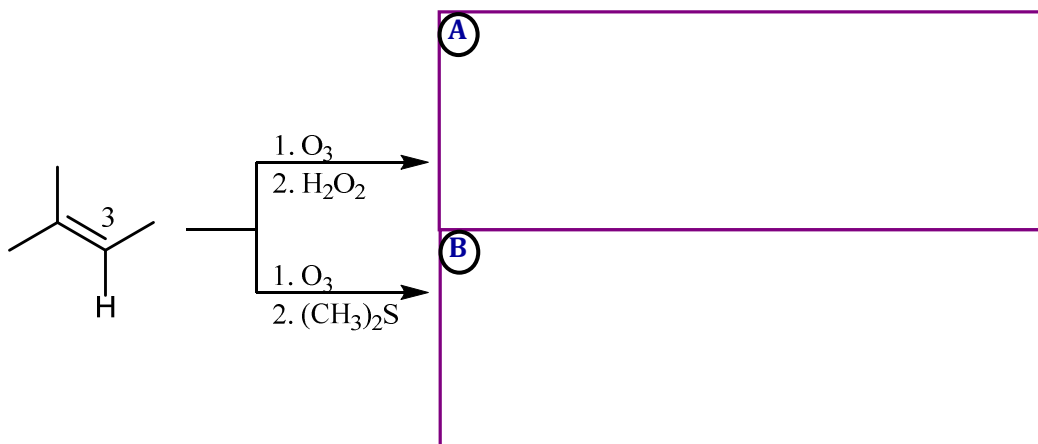


## Notes

## Lesson VI.2. Review: Preparation of Carbonyls from Alcohols, Alkynes and Alkenes

### *Preparation of carbonyls from alkenes*

Finally, we can use ozonolysis of an alkene to produce aldehydes, ketones or carboxylic acids:



Note that whether the  $sp^3$ -carbon-bound H remains or is oxidized depends on the workup conditions (step 2).

Notes