

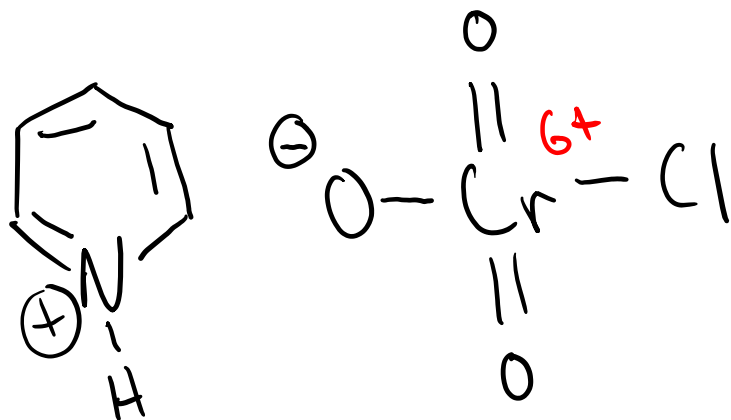
# Oxidation State & Oxidation of Alcohols

2/3/2023

# Chromium-based Reagents for Oxidizing Alcohols

(12.10)

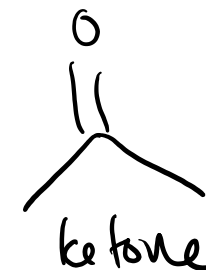
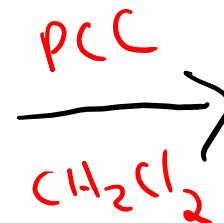
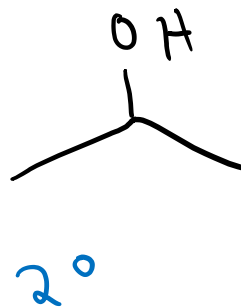
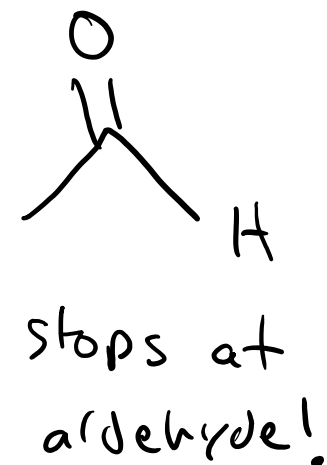
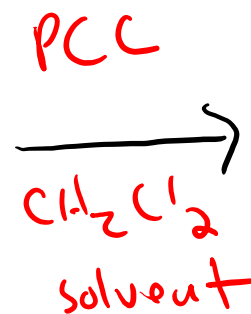
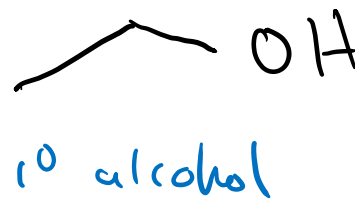
pyridinium chlorochromate



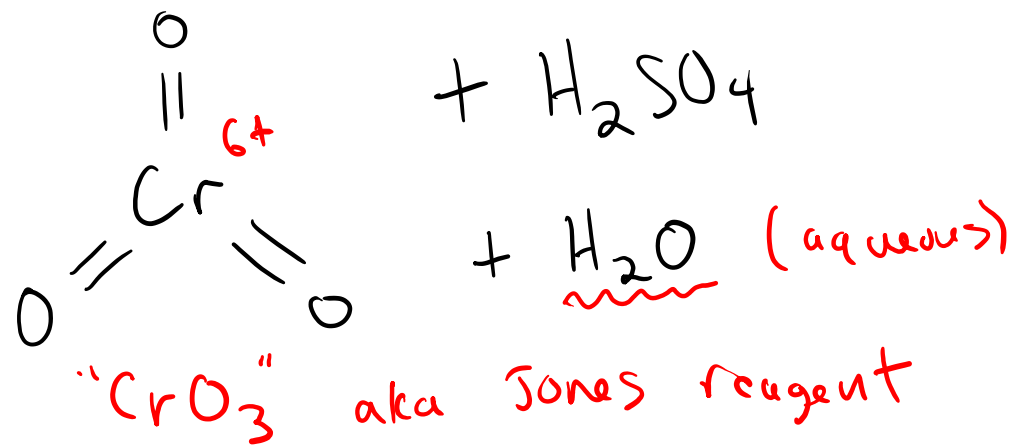
aka "PCC"

- requires anhydrous conditions - absolutely no H<sub>2</sub>O!  
(CH<sub>2</sub>Cl<sub>2</sub> solvent)

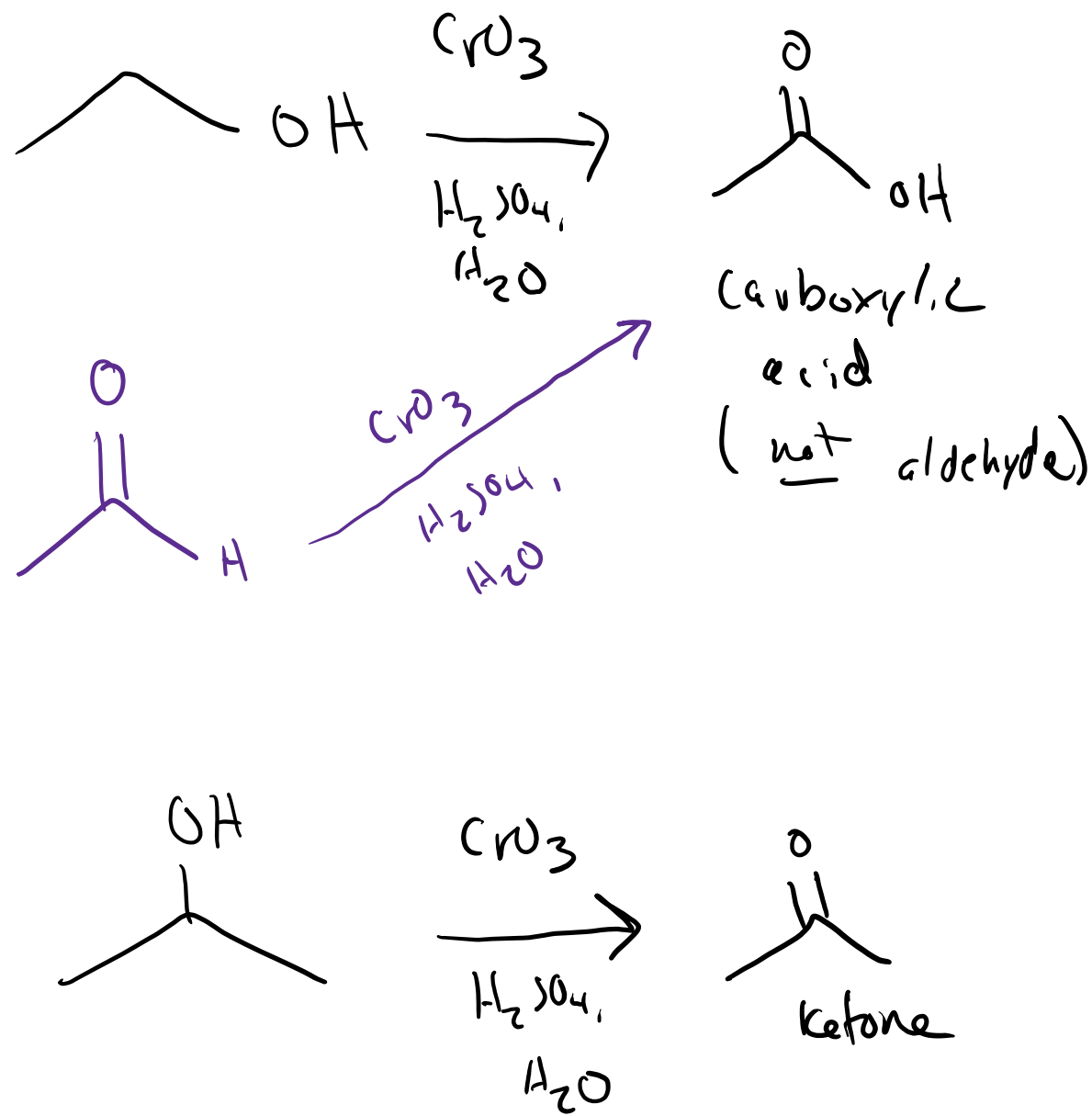
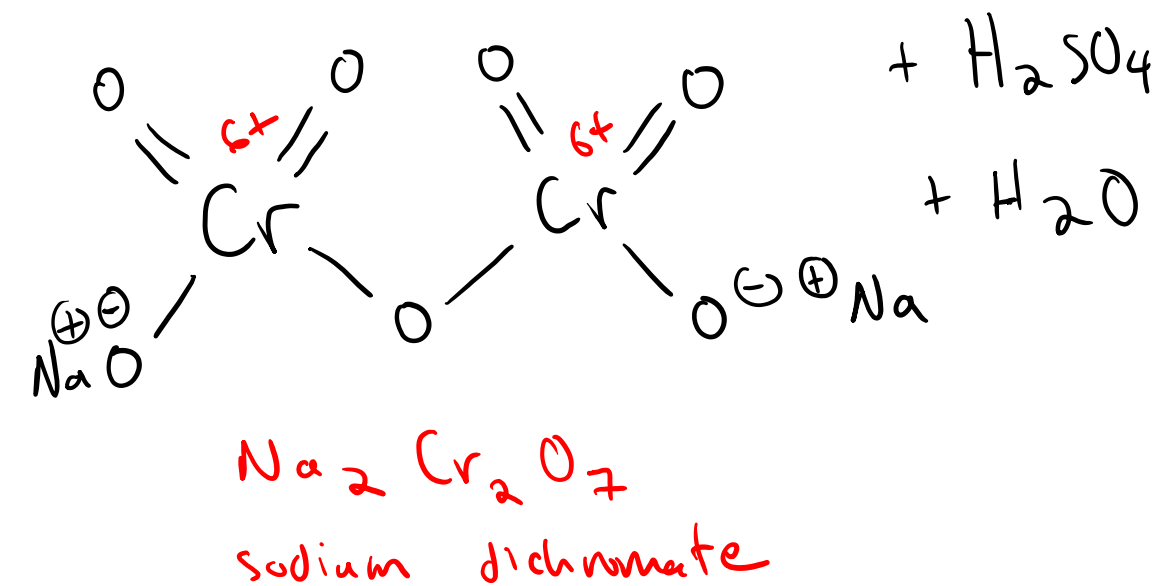
- extremely toxic + carcinogenic



# Chromium-based Reagents for Oxidizing Alcohols (and aldehydes!!) (12.10)

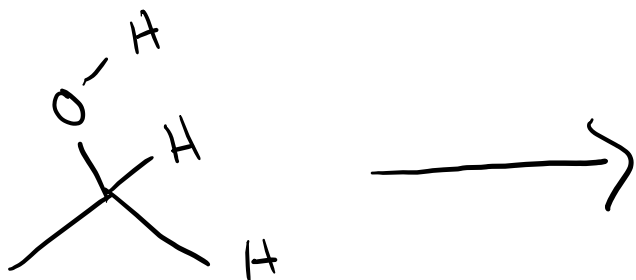


or



# Oxidizing Alcohols with Chromium: Mechanism

General:



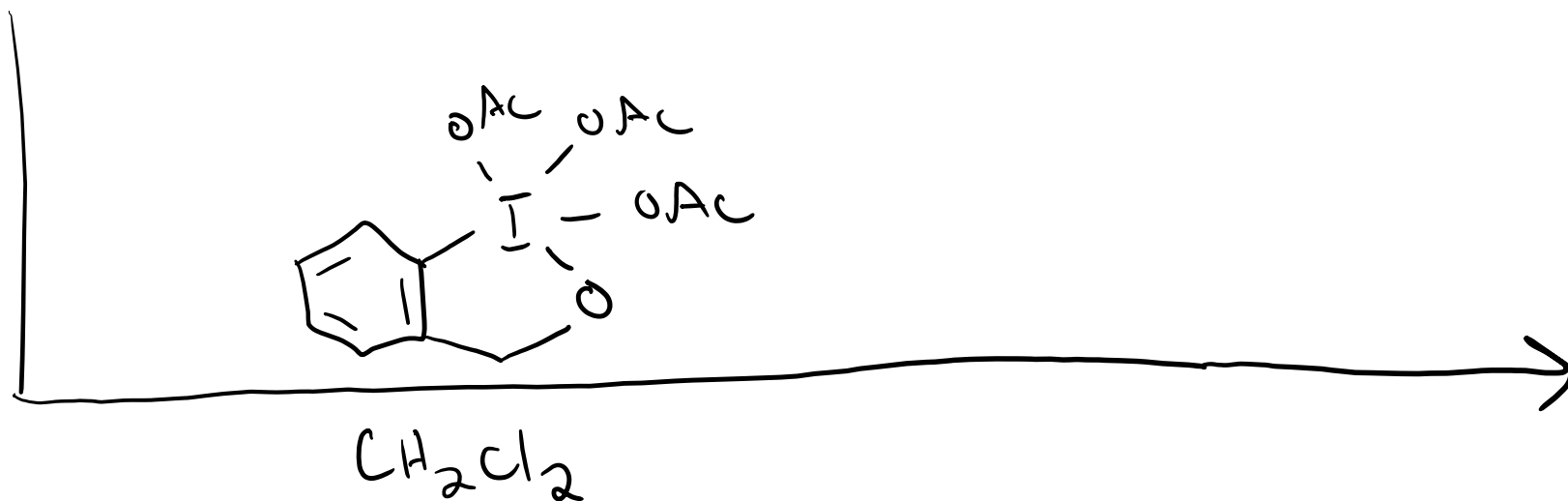
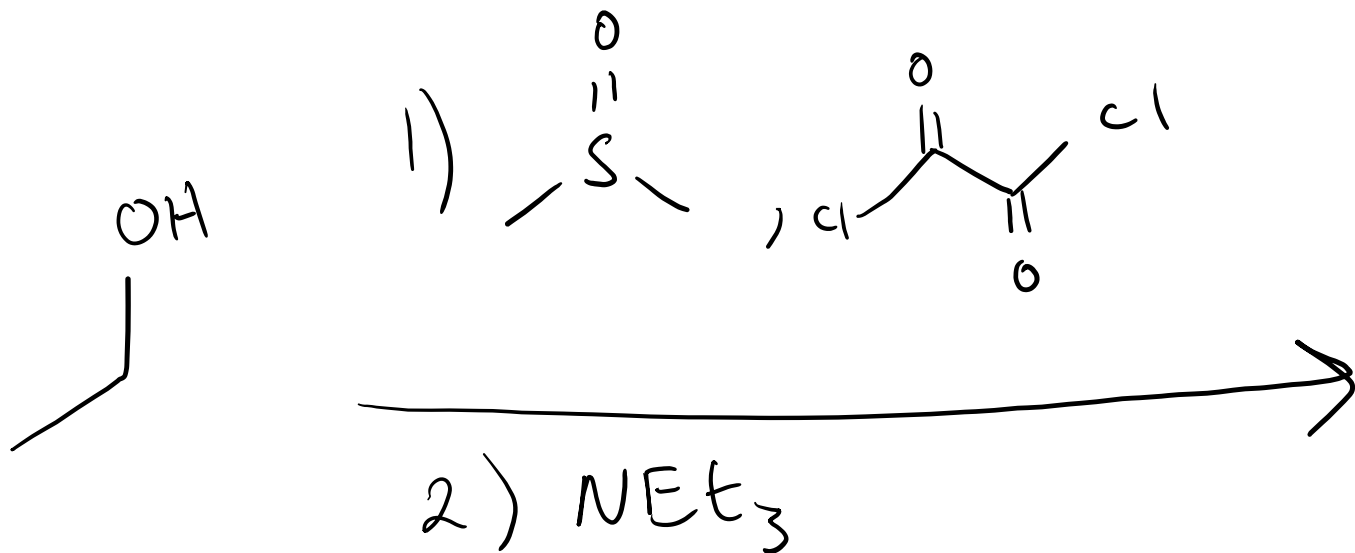
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PCC:

## Oxidizing Alcohols with Chromium: Mechanism

Aqueous  $\text{Cr}^{6+}$  :

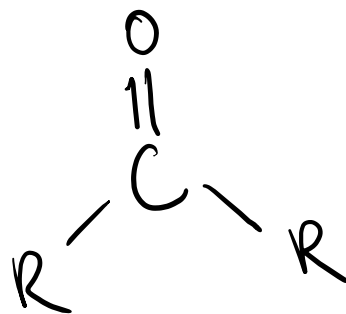
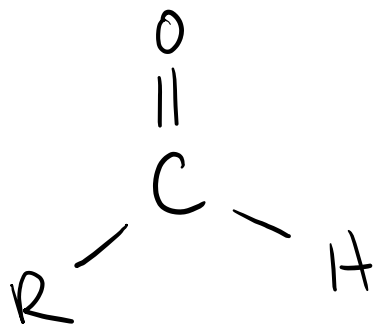
# Organic Oxidizing Agents: "Greener" Alternatives



★ Both recipes will also convert 2° alcohol into \_\_\_\_\_ ★

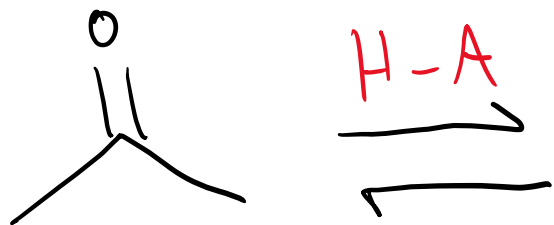
# Aldehydes and Ketones as Electrophiles

(19.4)



# Nucleophilic Addition to Aldehydes and Ketones

A) Under **acidic** conditions



B) Under **basic** conditions

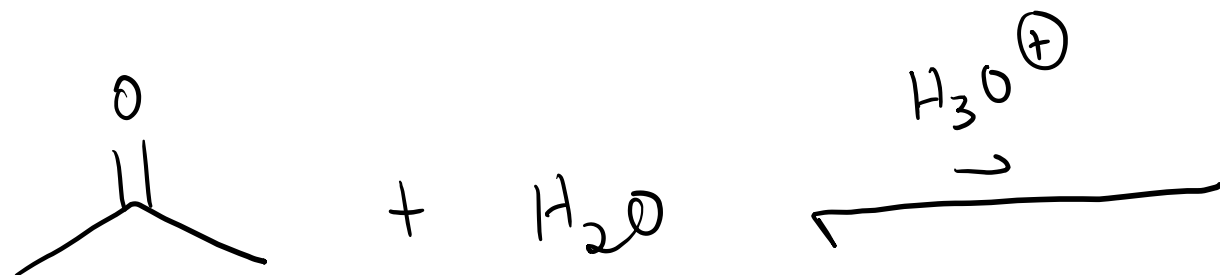
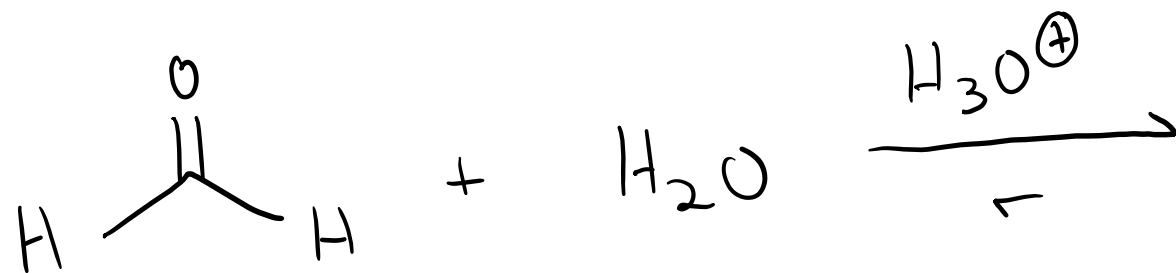




# Oxygen Nucleophiles

(19.5)

Formation of hydrates:



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mechanism:

