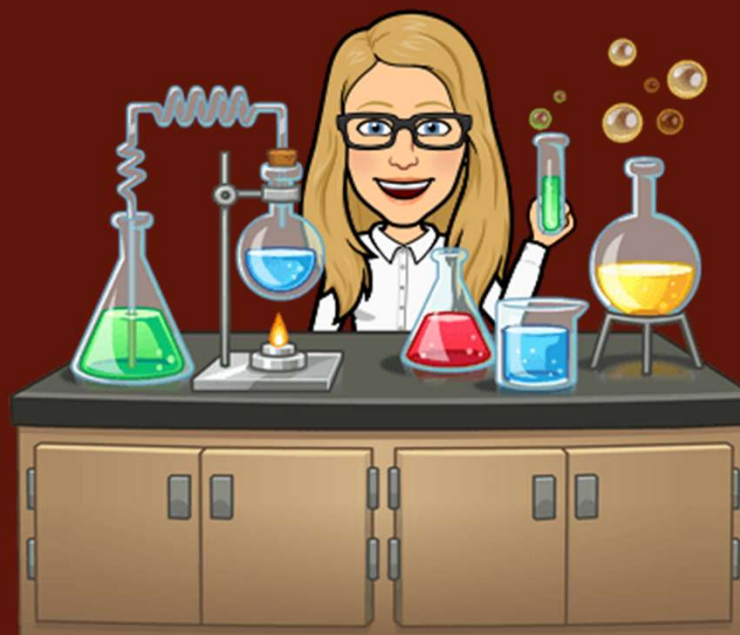


For clicker question voting, go to:  
<https://pollev.com/lauriestarke263>



Dr. Laurie S. Starkey  
Cal Poly Pomona

CHM 3150 Organic Chemistry II  
10/7/25

# Today's Topic: Preparation of Carboxylic Acids

## Ch. 20 Part 2

✓ Watch

✓ Read

✓ Practice

### Daily To-Do

### Flipped Lectures

#### Step 2

- Read Klein-Starkey
  - Section 20.1 **Introduction to Carboxylic Acids**
  - Section 20.4 **Preparation of Carboxylic Acids**
  - Section 20.6 **Nucleophilic Acyl Substitution**
  - Section 20.8 **Hydrolysis of Carboxylic Acid Derivatives**
- Work through **SkillBuilder 20.1** (20.13a-c, 20.14\*) and in-chapter problems 20.10adf, 20.17a-d, 20.18a-c\*  
\*indicates mechanism practice

- [Part 2 - Preparation of Carboxylic Acids](#)

**46 minutes**

*skeleton notes 20-4 through 20-6*

# Flipped Lecture

Preparation of Carboxylic Acids, RCO <sub>2</sub> H	31:55
A) By Oxidation	31:56
Preparation of Carboxylic Acids, RCO <sub>2</sub> H	34:37
Oxidation of Alkenes/Alkynes - Ozonolysis	34:38
Preparation of Carboxylic Acids, RCO <sub>2</sub> H	36:17
B) Preparation of RCO <sub>2</sub> H from Organometallic Reagents	36:18
Preparation of Carboxylic Acids, RCO <sub>2</sub> H	38:02
Example: Preparation of Carboxylic Acids	38:03
Preparation of Carboxylic Acids, RCO <sub>2</sub> H	40:38
C) Preparation of RCO <sub>2</sub> H by Hydrolysis of Carboxylic Acid Derivatives	40:39
Hydrolysis Mechanism	42:19
Hydrolysis Mechanism	42:20
Mechanism: Acyl Substitution (Addition/Elimination)	43:05
Hydrolysis Mechanism	47:27
Substitution Reaction	47:28
RO is Bad LG for S <sub>N</sub> 1/S <sub>N</sub> 2	47:39
RO is okay LG for Collapse of CTI	48:31
Hydrolysis Mechanism	50:07
Base-promoted Ester Hydrolysis (Saponification)	50:08
Applications of Carboxylic Acid Derivatives:	53:10
Saponification Reaction	53:11
Ester Hydrolysis	57:15
Acid-Catalyzed Mechanism	57:16
Ester Hydrolysis Requires Acide or Base	63:06
Ester Hydrolysis Requires Acide or Base	63:07
Nitrile Hydrolysis	65:22
Nitrile Hydrolysis	65:23
Nitrile Hydrolysis Mechanism	66:53
Nitrile Hydrolysis Mechanism	66:54
Use of Nitriles in Synthesis	72:39
Example: Nitirles in Synthesis	72:40

## Preparation of Carboxylic Acids

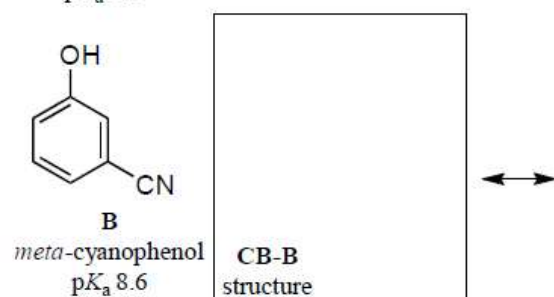
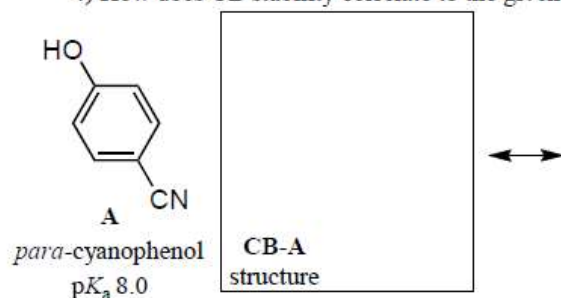
Organic Chemistry II CHM 3150, Dr. Laurie S. Starkey, C  
**Compare Acid Strength Homework**

Name: \_\_\_\_\_ Section (day/time): \_\_\_\_\_

The cyano group (-CN) is an electron-withdrawing group (EWG). The  $pK_a$  for *para*-cyanophenol (A) is 8.0 and the  $pK_a$  for *meta*-cyanophenol (B) is 8.6. Use this data to explain the effects of the cyano group on the acidity of phenol. **Resonance effects should be considered.** Use complete drawings (i.e., draw out the cyano group and ALL relevant resonance forms of each compound).

Consider the following guiding questions as you prepare your explanation:

- 1) What do the conjugate bases of these phenols look like? (please refer to the structures of the parent acids)
- 2) Are the cyano groups involved in the resonance of CB-A and/or CB-B?
- 3) Which conjugate base is more stable? Why?
- 4) How does CB stability correlate to the given  $pK_a$  data of the parent acids?

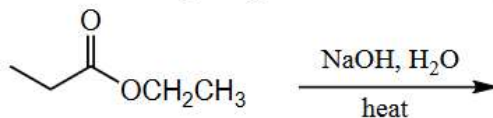


## Chapter 20 "Free Red Ink" Homework x2

**California State Polytechnic University, Pomona**  
Dr. Laurie S. Starkey, Organic Chemistry II CHM 3150

Name: \_\_\_\_\_ Section (Day/Time): \_\_\_\_\_

Predict the products of the following reactions (each reaction has TWO products) and provide a complete mechanism to account for their formation. Pay close attention to details, including the use of curved arrows and showing lone pairs and formal charges.



Reaction Mechanism:

Who inspires  
you?

Time to make  
them proud!



"Strong people don't  
put others down. They  
lift them up."

- Darth Vader  
philanthropist

# Dr. Starkey & Dr. Seaborg (1998)

