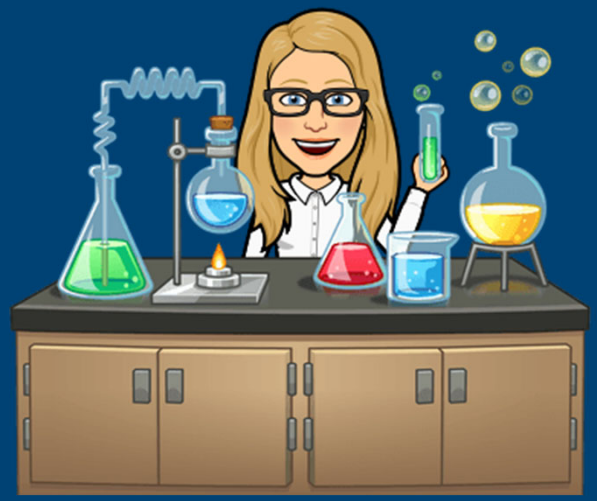
For voting, go to: https://pollev.com/lauriestarke263
or text LAURIESTARKE263 to 37607 to join poll



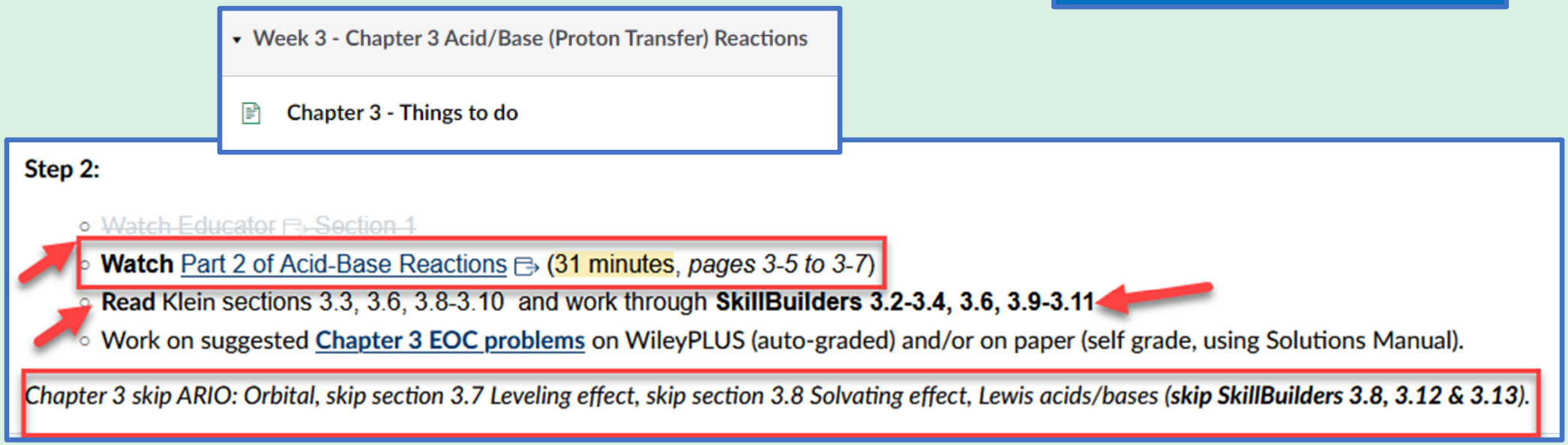
Dr. Laurie S. Starkey

Cal Poly Pomona

CHM 3140 Organic Chemistry I
Announcements 2/8/24

Today's Topic:
Acid-Base Chemistry
aka Proton-Transfer Reactions
(Chapter 3, Step 2)

Canvas Module
Chapter 3
- ✓ **Watch**
- ✓ **Read**
- ✓ **Practice**

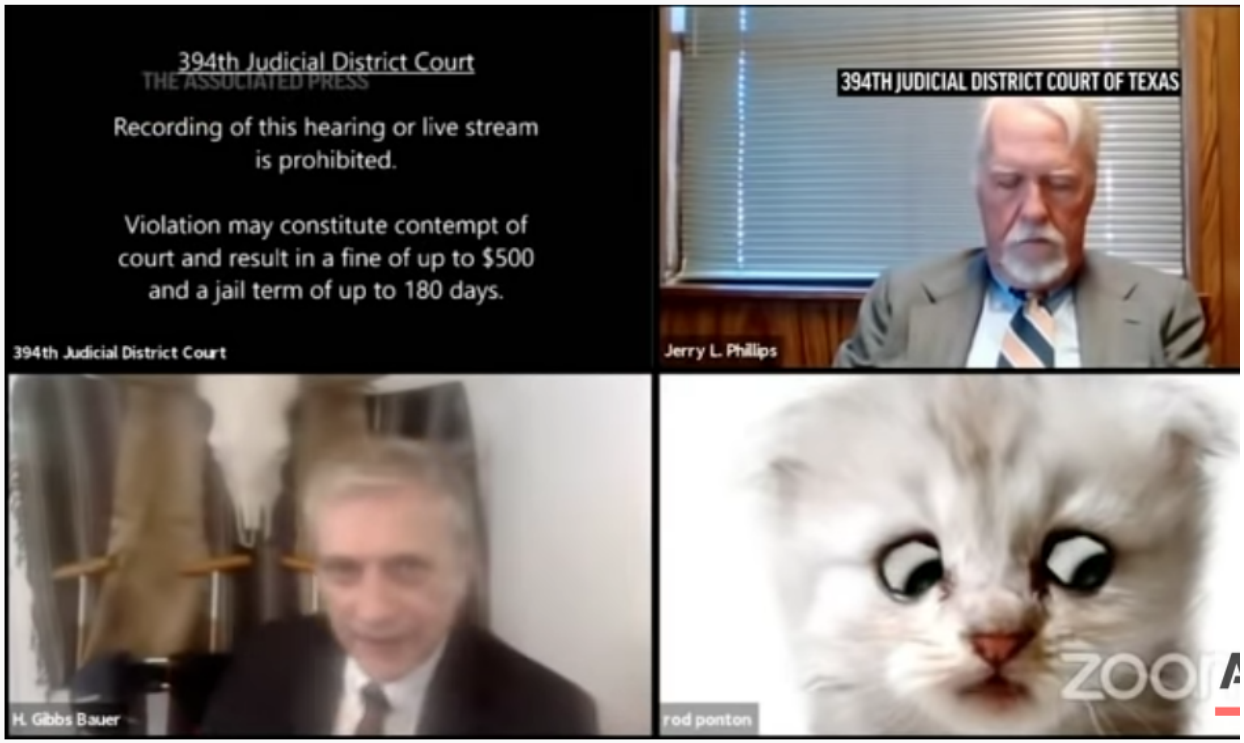


Educator Lecture

Resonance Effects on Acidity	41:15
Small and Large Amount of Resonance	41:17
Acid-Base Example	43:10
Which is Most Acidic? Which is the Least Acidic?	43:12
Acid-Base Example	49:26
Which is the Stronger Base?	49:27
Acid-Base Example	53:58
Which is the Strongest Base?	53:59
Common Acids/Bases	60:45
Common Acids/Bases	60:46
Example: Determine the Direction of Equilibrium	64:51

ARIO: Resonance effects, predicting strength of bases & identifying most acidic proton

Why cats are not allowed in the operating room.



Filter turns lawyer into cat during Zoom hearing

Why cats aren't allowed in a courtroom…

Finishing Exam 1 material

CHM 3140 Organic Chemistry I, Dr. Laurie S. Starkey, Spring 2024

Tentative Schedule (Chapter and *Worksheet/Step #* given for each day)

Week	Mon	Tues	Wed	Thurs	Fri
1	1/22	1/23 Ch. 1 ***#1***	1/24	1/25 Ch. 1 ***#2***	
2	1/29	1/30 Ch.1 ***#3*** Ch.2 ***#1***	1/31	2/1 Ch. 2 ***#2***	2/2
3	2/5	2/6 Ch. 3 ***#1***	2/7	2/8 Ch. 3 ***#2***	2/9
4	2/12	2/13 Exam Review	2/14 you are here	2/15 **Exam I**	2/16

Ch. 3 Free Red Ink Homework

Organic Chemistry I, CHM 3140, Dr. Laurie S. Starkey, Cal Poly Pomona

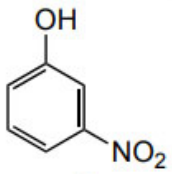
Compare Acid Strength Homework

Name:_____ Section (day/time):_____

The nitro group (NO_2) is an electron-withdrawing group (EWG). The pK_a for meta-nitrophenol (**A**) is 8.3 and the pK_a for para-nitrophenol (**B**) is 7.1. Use this data to explain the effects of the nitro group on the acidity of phenol. **Resonance effects should be considered.** Use complete drawings to support your answer (i.e., draw out the nitro group and ALL relevant resonance forms of the conjugate bases).

Consider the following guiding questions as you prepare your explanation:

1) What is the relationship between pK_a and acidity? Which is the stronger acid, A or B?
2) What do the conjugate bases of these phenols look like? (please refer to them as **CB-A** and **CB-B**)
3) Are the nitro groups involved in the resonance of CB-A and/or CB-B?
4) Which conjugate base is more stable? Why?



A
meta-nitrophenol
pK_a 8.3

CB-A
structure

Active Assignments	Submissions
Resonance Homework	42
3D Sketch	88

115 students enrolled

California State Polytechnic University, Pomona

Organic Chemistry I, CHM 3140, Dr. Laurie S. Starkey

Lewis Structure and 3-D Sketch Homework

Name:_____ Section: _____ (day

For each of the following compounds, draw a 3-dimensional sketch, using dashes and w **the molecule such that the maximum number of atoms are located in the plane of t** sure to show all atoms (no line drawings), to draw pi bonds (with sets of overlapping p include the orientation of lone pairs of electrons on oxygen and nitrogen.

$CH_3CH_2CH_2CH_2CN$

Chapter 1
Free Red Ink
Homework

$CH_3CHCHCHO$

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Lewis Structures & Resonance

Name:_____ Section: _____

For each of the following compounds, draw the important resonance forms. B structures. Use curved arrows to convert one drawing to the next. Indicate v minor contributors, or whether they have the same importance, and br ***NOTE: if a structure is charged then the goal is to find resonance structure spreading a charge among multiple atoms ("delocalizing" the charge) will s***

CH_3CO_2H

Chapter 2
Free Red Ink
Homework

$CH_3-\overset{\ominus}{C}H-C\equiv N$

$CH_3\overset{\oplus}{C}HOH$

EOC Credit: Submit Cover Sheet to Gradescope

CHM 3140 Organic Chemistry I, Dr. Laurie S. Starkey, Cal Poly Pomona
Ch. 3 (Klein): Acid-Base Reactions, End-of-Chapter Problems Cover Sheet

Name: _____ **Signature:**_____

By signing, you are confirming that the work you are submitting is your own.

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Suggested Ch. 3 EOC problems (first complete and self-grade in-chapter problems 1-31)

37a-g	46ab	56
38a-h	**47skip(d)** & explain!	57
39a-c	48	58
40a-c	**49bcd** & explain!	59

Too simple in WileyPLUS!

Acids in the News…

c&en

BUSINESS

Organic acids grow on the farm

Livestock farmers adopt the additives as replacements for growth-promoting antibiotics

by **Michael McCoy**

MAY 31, 2017 | APPEARED IN **VOLUME 95, ISSUE 23**

"Antibiotics are thought to promote animal growth by suppressing bacteria that consume nutrients in the gastrointestinal tracts of their hosts. But overuse of antibiotics can cause bacteria to become resistant—a danger to both animal and human populations.

Organic acids have been added to animal feed for decades to reduce bacteria growth and mold. When fed to animals in larger quantities, the acids disrupt the metabolic processes of gut bacteria without the accompanying risk of resistance, according to Fefana, a European feed ingredients association."

With antibiotics increasingly being shunned as growth promoters, chemical makers are investing in short-chain organic acids as a new way to help farmers increase meat production without contributing to antimicrobial resistance.

The specialty chemical company Oxea just completed an expansion of its plant in Oberhausen, Germany, that boosts output of short-chain organic acids such as propionic acid, butyric acid, and isobutyric acid.

[+]Enlarge

Credit: Shutterstock

Organic acids are replacing antibiotics in animal feed formulas.

Examples of "Organic Acids" Propionic acid, Butyric acid, Isobutyric acid, Valeric acid