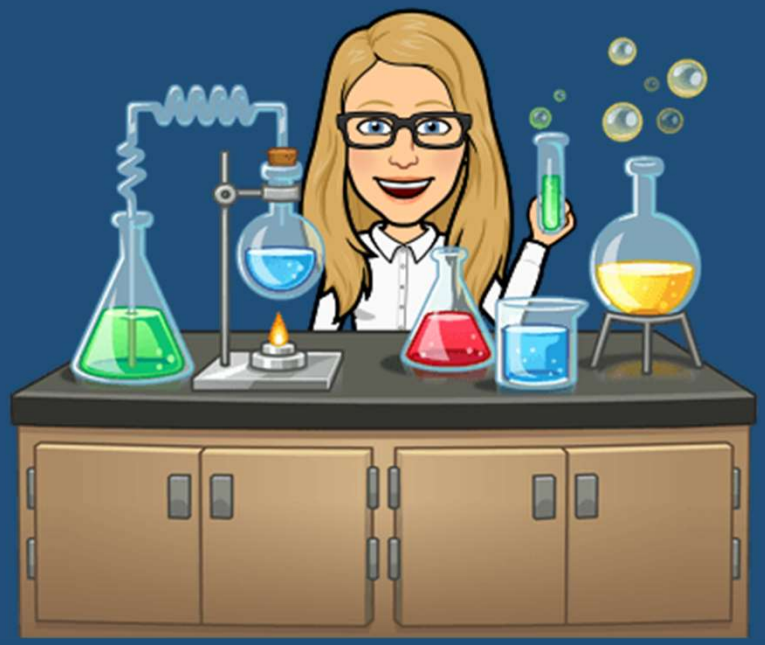
For clicker question voting, go to:
https://pollev.com/lauriestarke263



Dr. Laurie S. Starkey

Cal Poly Pomona

# CHM 3150 Organic Chemistry II
# 9/30/25

# Today's Topic: Reaction with Nitrogen Nucleophiles & Reduction Reactions

**Ch. 19 Part 3**

- ✓ **Watch**
- ✓ **Read**
- ✓ **Practice**

**Step 3**

- Read Klein 19.6 **Reaction with Nitrogen Nucleophiles**
- Read Klein 19.8 & 19.9 **Reduction of Ketones & Aldehydes** (via sulfur & hydride nucleophiles)
- Work through **SkillBuilders 19.3** and **19.4** and problems 19.14, 19.15, 19.17 - 19.20

- Part 3a - Nitrogen Nucleophiles
  **8 minutes**
  *skeleton notes page 19-8*
- Part 3b - Oxidations & Reductions
  **9 minutes**
  *skeleton notes page 19-9*

# Flipped Lectures:
# Imines & Reduction Rxns

| | | |
|---|---|---|
| Reaction with Nitrogen Nu: | **Formation of Imines** | 90:11 |
| Reaction with Nitrogen Nu: | | 90:12 |
| Example | | 92:18 |
| Mechanism of Imine Formation | | 93:24 |
| Mechanism of Imine Formation | | 93:25 |
| Oxidation of Aldehydes | **Reduction Reactions** | 98:12 |
| Oxidation of Aldehydes 1 | | 98:13 |
| Oxidation of Aldehydes 2 | | 99:52 |
| Oxidation of Aldehydes 3 | | 100:10 |
| Reductions of Ketones and Aldehydes | | 100:54 |
| Reductions of Ketones and Aldehydes | | 100:55 |
| Hydride/ Workup | | 101:22 |
| Raney Nickel | | 102:07 |
| Reductions of Ketones and Aldehydes | | 103:24 |
| Clemmensen Reduction & Wolff-Kishner Reduction | | 103:40 |

# For next class…
# Acetals as Protective Groups (Ch. 19 Step 4)
# *Carbohydrate Examples FYI (optional)*

**Step 4**

- Read Klein
  - Sections 12.7 & 19.5 **Protective Groups**
  - Section 19.12 **Synthesis Strategies**
- Work on problems 12.18, 19.10, 19.11 (protective groups)
- Work through **SkillBuilder 19.7** and problems 19.40a-e,g (synthesis)

Part 4 - Acetals as Protective Groups
**20 minutes**
*skeleton notes page 19-12 to 19-14*

# & Starting Chapter 20 (Step 1: Properties of Carb. Acids)!

**Step 1**

- Nomenclature is a BIG topic, so you can chip away at it and we will work on problems at the end (see Step 4)
  - Practice Carboxylic Acid & CA Derivatives Nomenclature: practice worksheet and answer key
- Read Klein 20.3 **Physical Properties**
- Work through **Conceptual Checkpoints** 20.4-7, 20.9ab

- Part 1 - Physical Properties
  **32 minutes**
  *skeleton notes pp 20-1 through 20-3*

# Ch. 19 Recommended Textbook Problems

**Suggested Ch. 19 problems** **Mechanisms and* ***Synthesis (good to work on by hand)*

**In-Chapter Problems** (includes **SkillBuilders 19.1–19.6**)

19.1a–d
19.2a–f
19.3a–c
19.4ab
19.5a–g**
19.6a–d
19.7a–c
19.8ab**
19.11a
19.15a–c**
19.17ab*
19.18**
19.19a**
19.20ab
19.21*
19.22
19.23ab**
19.24a–d
19.25
19.26ab
19.27ab
19.28ab*
19.29a–d
19.30*
19.31ab*
19.32a–f
19.33

A smidge of poison in a basket. Apple seeds contain an organic compound that releases toxic cyanide.

19.10a–f
19.35
19.37a–e**
19.38**

**End-of-Chapter (EOC) Problems**

19.40acd
19.41a–e, hi
19.46ab
19.47b
19.48a*
19.49ab*
19.52a–d**
19.59a–c**
19.60a–c**
19.61a–d
19.63b*
19.64abe
19.65a**
19.66**

19.68

Big cats use pheromones to attract mates and establish their territory. These chemical signals are not only found in the marking fluid that lions spray; pheromones are also located in the lion's hair, mane, saliva, and urine.

19.72
19.73a–f**
19.74
19.79
19.80
19.81

Problems 1-81+ *SkillBuilders, Conceptual Checkpoints & EOC*

**Organic Chemistry II CHM 3150, Dr. Laurie S. Starkey, Cal Poly Pomona**
**Ch. 20 (Klein-Starkey): Carb. Acids & Derivatives, Textbook Problems Cover Sheet**

**Name:** _____ **Signature:** _____

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

**To earn 10 points course credit, you must write and sign your name above, check one of the boxes below, and submit this page to Gradescope.** If you worked problems by hand on paper (or tablet), complete this cover page and include it as the first page of the pdf you submit. Use Genius Scan (or equivalent app) to convert your handwritten homework to a clean, readable pdf: ***please crop your pages and apply a Black & White filter.***

What these pears all have in common is the butyl acetate that contributes to their fragrance and flavor.

**Handwritten and/or WileyPLUS problems?** Please mark the appropriate box below.

☐ hand-written only ☐ hand-written problems & WileyPLUS ☐ WileyPLUS only

**For hand-written work, students need to do at least 40 problems for full credit.** You are expected to use the SSM to self-grade your hand-written work, and it should not be error-free or without corrections! *Students who simply copy answers from the Solutions Manual and submit them as their own work will not earn credit on this assignment.* In WileyPLUS, there are over 300 points that can be earned (~2 points per problem). **A WileyPLUS score of 80 or higher will earn full homework credit.** Partial homework credit will be given for scores below 80.

**Suggested Ch. 20 problems** **Mechanisms and **Synthesis (good to work on by hand)*

**In-Chapter Problems** (includes **SkillBuilders 20.1–20.3**)

**Due 10/16/25**
**For credit**
**(10 pts each)**

**In-Chapter Problems** (includes **SkillBuilders 20.1–20.3**)

| | | | |
|---|---|---|---|
| 20.1a–f | 20.10adf | 20.18a–c* | 20.26a–c |
| 20.2a–f | 20.11 a–l (skip g) | 20.19a–c | 20.27b** |
| 20.3a–d | 20.12 c–h | 20.20a–d | 20.28* |
| 20.4 | 20.13a–c* | 20.21** | 20.30a–f** |
| 20.5 | 20.14* | 20.22** | 20.32ab** |
| 20.6 | 20.15a–f | 20.23* | |
| 20.7* | 20.16ab* | 20.24a–d | |
| 20.9ab | 20.17a–d | 20.25** | |

Ants produce the simplest carboxylic acid, formic acid.

**End-of-Chapter (EOC) Problems**

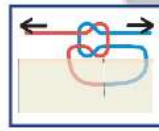
| | | | |
|---|---|---|---|
| 20.35b | 20.42ab** | 20.58 | 20.74 |
| 20.36 | 20.44 a–h (skip g) | 20.59a–e | 20.75 |
| 20.37c–g | 20.45a–d | 20.68 | 20.76 |
| 20.38a–c | 20.46 a–h (skip c & e) | 20.60 | 20.77 |
| 20.41a–c** | 20.47 | 20.61a–e* | 20.81 |
| | 20.48ab** | 20.62ab | |
| | 20.49A–D | 20.63 | |
| | 20.50a–f** | 20.65 | |
| | 20.52ac** | 20.70 | |
| | 20.54** | 20.71 | |
| | 20.55 | 20.72 | |
| | 20.56* | 20.73 | |

When a fir tree is damaged by an insect, the tree defends itself by producing a compound that mimics an insect hormone, thus disrupting the insect's ability to undergo metamorphosis (*i.e.*, proceed through its developmental stages).

Problem 20.31 (SB 20.2)

**Ch. 12:** 12.12d*, 12.16, 12.17*, 12.51*, 12.52*

**Ch. 19:** 19.9, 19.10**



If you want to be a surgeon, you will have to learn various suturing techniques, such as how to tie this square knot.

Problem 20.65

**See Cover Sheets**
**For suggested**
**Ch. 19 & 20 EOC**
WileyPLUS &
written suggested