

Remote Classrooms 2021 & Beyond

Teaching/Tech Strategies

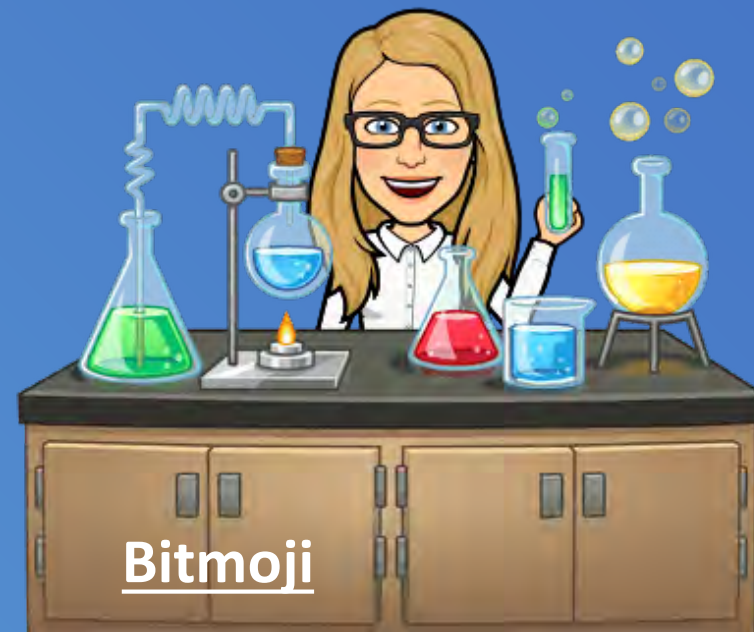
Motivate & Build Community



Dr. Laurie S. Starkey

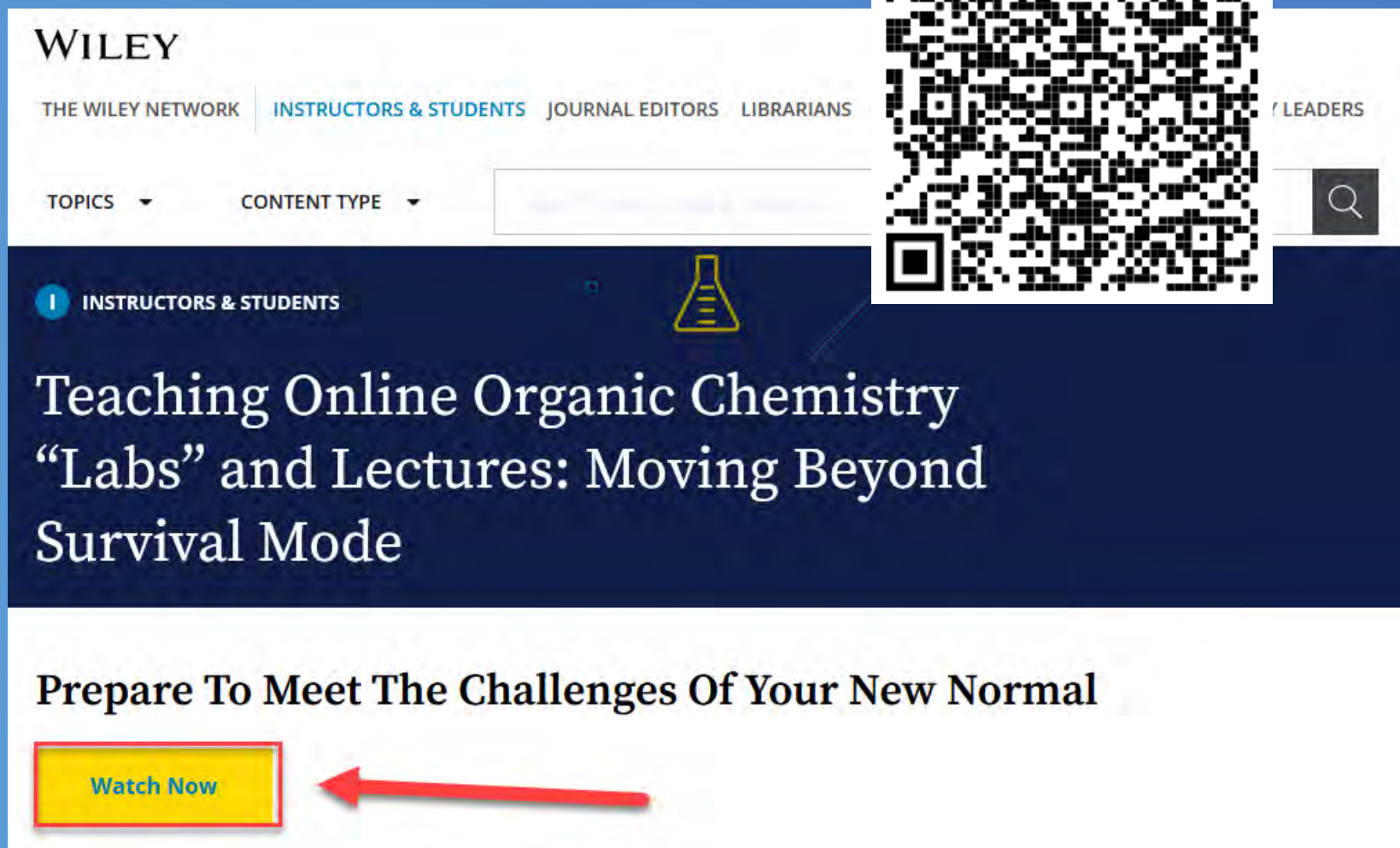
Cal Poly Pomona

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WILEY

FYI: Related Webinar on Demand @ Wiley.com



The screenshot shows the Wiley website interface. At the top, the 'WILEY' logo is on the left, and navigation links for 'THE WILEY NETWORK', 'INSTRUCTORS & STUDENTS', 'JOURNAL EDITORS', 'LIBRARIANS', and 'LEADERS' are on the right. Below these are dropdown menus for 'TOPICS' and 'CONTENT TYPE', followed by a search bar. A large QR code is positioned to the right of the search bar. The main content area has a dark blue header with a yellow flask icon and the text 'INSTRUCTORS & STUDENTS'. Below this, the webinar title 'Teaching Online Organic Chemistry "Labs" and Lectures: Moving Beyond Survival Mode' is displayed. Underneath the title is the subtitle 'Prepare To Meet The Challenges Of Your New Normal'. At the bottom left, there is a yellow 'Watch Now' button with a red border, and a red arrow points from the right towards this button.

WILEY

THE WILEY NETWORK | INSTRUCTORS & STUDENTS | JOURNAL EDITORS | LIBRARIANS | LEADERS

TOPICS ▾ CONTENT TYPE ▾

INSTRUCTORS & STUDENTS

Teaching Online Organic Chemistry
"Labs" and Lectures: Moving Beyond
Survival Mode

Prepare To Meet The Challenges Of Your New Normal

Watch Now

Seminar explores
resources for:

- Virtual labs
- Remote lecture
- Making videos
- Building community

WILEY

One Year in: Lessons Learned

- Invest in an iPad (Apple Pencil, Paperlike screen protector)
- Gradescope to manage student work
- Genius Scan to make PDF w/phone
- Use a headset
- Get a good snipping tool (Snagit)
- Create a YouTube channel

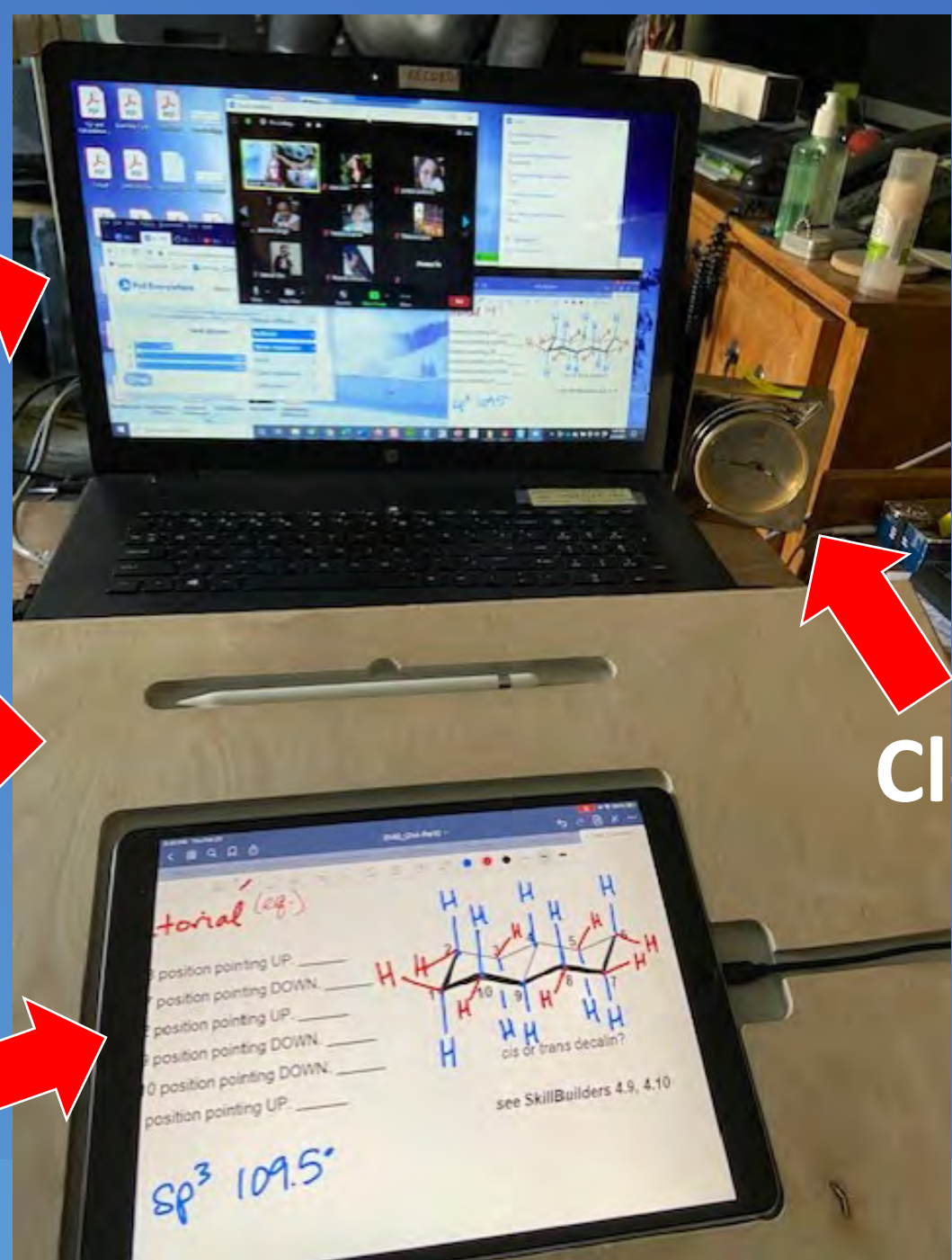


My Remote Classroom

Laptop (Zoom
& Webcam)

Support Board
(Ergonomics)

iPad (Zoom
& GoodNotes)



How to: Teach, DRAW & Show Models Using Zoom

This screenshot illustrates a Zoom meeting setup for teaching chemistry. The main window displays a shared iPad screen showing a chemical reaction scheme and a poll. The reaction scheme shows the conversion of cyclopentanone to a tertiary alcohol and then to an ester. The poll, titled 'Respond at PoliEv.com/lauriestark', shows results for five options (A-E) with a 'best answer' highlighted. The Zoom interface includes a grid of attendees, a chat window, and a bottom toolbar with controls like 'Stop Video', 'Security', 'Participants', 'Share Screen', and 'End'. Red arrows point to specific features: 'Shared iPad screen' (top left), 'Zoom Attendees' (top right), 'Chat Q/A' (middle right), 'Anonymous Polling' (bottom left), and 'My Webcam' (bottom right).

Shared iPad screen

Zoom Attendees

Chat Q/A

Anonymous Polling

My Webcam

Chemical Reaction Scheme:

Reaction 1: Cyclopentanone $\xrightarrow{\text{Step 1}}$ 1-cyclopentanol $\xrightarrow{\text{Step 2}}$ 1-acetylcyclopentane

Reagents:

I. 1) EtNa; 2) H_3O^+ ; 3) AcCl, pyridine

II. 1) EtLi; 2) H_3O^+ ; 3) AcCl, pyridine

III. 1) EtMgBr; 2) H_3O^+ ; 3) AcOH, pyridine

Poll Results:

Option	Percentage
A	11%
B	11%
C	56%
D	11%
E	22%

How to: Teach, DRAW & Show Models Using Zoom

Provide worksheet or skeleton notes as PDF

- ChemDraw, PowerPoint, Word
- Hand-written notes captured with **Genius Scan**

Start Zoom session on laptop for best functionality

- **Webcam** for video of me
- Full keyboard for **chat**
- presenter tools easy to find/use
- **PollEverywhere** results
- can share screen to show LMS/websites/VitalSource text/**MarvinSketch**

Join Zoom session with my iPad or phone and share screen

- Do NOT join audio (gives echo/feedback). Hit “cancel” when asked to join audio.
- Phone camera can capture you writing on paper, or **molecular models**
- iPad apps enable marking up PDF to work, annotate notes (I use Good Notes)



What to do with the 10 Min. Before Zoom Class?

“Small talk” with a computer screen is SO awkward

- Show live animal cams from [EXPLORE.org](https://explore.org)
- Turn on video so you can make a toast (coffee cup)
- Ask a fun poll question in the chat
- Display outline/learning objectives for the day
- Play announcements via PowerPoint
 - Today's topics, Due dates/deadlines
 - Memes/cartoons
 - Interesting molecules, people, news

What to do with the 10 Min. Before Zoom Class?

Interesting Molecules: Can You Match the Structure and Property?

3,4-methylenedioxymethamphetamine
an octopus on this drug craves hugs

(Z)-7-dodecenyl acetate
puts elephants and moths in a romantic mood

urushiol
poison ivy allergy & irritant

cannabidiol
pain-reliever from hemp

isoamyl acetate
might make a monkey go a

adrenaline
Fight? or Flight?!

Assignments due ASAP...and Ch. 18 EAS#1, EAS#2

California State Polytechnic University, Pomona
Organic Chemistry II, CHM 3150, Dr. Laurie S. Starkey
Electrophilic Aromatic Substitution (EAS) Homework I

Name: _____ Section: _____ (day/time)

c1ccccc1 $\xrightarrow{E^+}$ c1ccc(cc1)[E] or c1ccc(cc1)[E]

A) Which would you
hint: compare the

c1ccccc1 $\xrightarrow{E^+}$ c1ccc(cc1)[E]

NAME	POINTS	RELEASED
Messy Aldol	3.0	OCT 22 !!

California State Polytechnic University, Pomona
Organic Chemistry II, CHM 3150, Dr. Laurie S. Starkey
Electrophilic Aromatic Substitution (EAS) Homework II

Name: _____ Section: _____ (day/time)

CC1=CC=CC=C1 \xrightarrow{HA} CC1=CC=CC=C1C2=CC=CC=C2

A) Provide a complete mechanism for the above Electrophilic Aromatic Substitution Reaction. Pay close attention to details, including lone pairs, formal charges and the use of curved arrows.

"Luke, you must learn the ways of the force"



"I'm ready, Obi Wan."



Jedi Training in 2020-21

"Ooooookay. Let's see here. After you've logged in, you're gonna want to go to the student portal and click Jedi...."



Today's Topic: Stereochemistry (Chapter 5, Step 2)

Weeks 6/7 - Chapter 5

Stereochemistry: Chirality and Stereoisomerism

See Week 6/7 in Blackboard

- Read
- Watch
- Practice

Step 2

- Watch **Educator Section 1**
 - middle of **Stereochemistry** (41:47 - 77:11)
- Klein Chapter 5, sections 4-7, and work through **SkillBuilders 5.6, 5.7, 5.8**

- III) Fischer Projections (5.7)
- IV) Molecules with Multiple Chiral Centers (5.5, 5.6)
- V) Optical Activity and other physical properties (5.4)

Maki

CHM 3140, Dr. Laurie S. Starkey, Spring 2021 Tentative Schedule

Week	Mon	Tues	Wed	Thurs	Fri
1	1/25 Holiday	1/26 Chapter 1	1/27	1/28 Chapter 1	1/29
2	2/1	2/2 Chapter 2	2/3	2/4 Chapter 2/3	2/5
3	2/8	2/9 Chapter 3	2/10	2/11 Chapter 3	2/12
4	2/15	2/16 Chapter 3	2/17	2/18 Exam I	2/19
5	2/22	2/23 Chapter 4	2/24	2/25 Chapter 4	2/26
6	3/1	3/2 Chapter 5	3/3	3/4 Chapter 5	3/5
7	3/8	3/9 Chapter 5	3/10	3/11 IR (Ch.14)	3/12
8	3/15	3/16 NMR (Ch.15)	3/17	3/18 Exam II	3/19

you are here

How to: Give Synchronous Exams Remotely

Distribute exam PDF via email

- Academic integrity pledge (+ WileyPLUS quiz, + build relationship, + guilt-trip “Be the person your dog thinks you are!”)

Proctor via Zoom (webcams on)

- Lockdown browsers = equity concerns
- Private chat for questions
- Easy to make announcements

Student submits completed exam to LMS/Gradescope

- Student can print, write on exam, Genius Scan to make PDF
- Student can use tablet/iPad to work on PDF directly
- Student can write answers on blank paper, then Genius Scan

Remote Teaching → Course Redesign (Lecture)

To Reduce Cheating, Minimize High-Stakes Exams

- Pre-pandemic grading: 95% exams, 5% “free red ink” homework
- Major redesign needed!

Chap. 1, 2, 3	Exam I	100 pts (20%)
Chap. 4, 5, 15	Exam II	100 pts (20%)
Chapters 6, 7	Exam III	100 pts (20%)
Chapters 1-11	Final Exam	200 pts (40%)

Thursday, February 14 (50 min. during class time)

Thursday, March 14 (50 min. during class time)

Thursday, April 18 (50 min. during class time)

Tue, 5/14 or Thu, 5/16 (see schedule for times)

Remote Teaching → Course Redesign (Lecture)

New Grading Scheme

- 60% exams, lower-stakes final & lowest midterm is dropped
- 25% homework (WileyPLUS & “free red ink” assignments)
- 15% weekly reflection (study groups, motivate, mental health)

How will your learning be measured?

Course grades are based on textbook-based homework (EOC), occasional quizzes, brief weekly assignments, three written midterm exams, and a final exam. I am planning on proctoring the written exams synchronously via Zoom, but please let me know if you need to adjust your time slot. *Each exam is cumulative but will emphasize the immediately preceding chapters.* Exams must be taken as scheduled and NO make-up exams will be given, but **the lowest midterm grade will be dropped**. If more than one midterm is missed, a grade of zero will be assigned for the missing midterm exam(s).

Homework problems	125 pts (25%)	End-of-Chapter (EOC) problems/WileyPLUS/Quiz
Weekly study/reflection	75 pts (15%)	Friday Fives, OLC Study Group, Exam Wrapper...
Ch. 1, 2, 3	Exam I	100 pts
Ch. 4, 5, 15	Exam II	100 pts
Ch. 6, 7	Exam III	100 pts
Ch. 1-11	Final Exam	100 pts
		(40%) Thursday, 2/18 (60 min. during class time)
		Thursday, 3/18 (60 min. during class time)
		Thursday, 4/22 (60 min. during class time)
		(20%) Tuesday 5/18 (see schedule for times)

Remote Teaching → Course Redesign (Lecture)

25% Homework: Klein SkillBuilders and/or End-of-Chapter

- Encourage self-assessment and use of Solutions Manual
- WileyPLUS enables engagement with textbook & resources

Chapter 8 - Alkenes

- Introduction & Nomenclature (Conc.Chkpt. 8.1-8.4)
Due May 18 at 11:59pm | 4 pts
- Addition of HX: Hydrohalogenation (SkillBuilders 8.1 & 8.2)
Due May 18 at 11:59pm | 13 pts
- Addition of H₂O (SkillBuilders 8.3 & 8.4)
Due May 18 at 11:59pm | 14 pts
- Catalytic Hydrogenation
Due May 18 at 11:59pm | 4 pts
- Addition of Br₂ or Cl₂ (SkillBuilder 8.6)
Due May 18 at 11:59pm | 6 pts
- Oxidation Reactions
Due May 18 at 11:59pm | 10 pts
- Summary and Synthetic Strategies
Due May 18 at 11:59pm | 16 pts
- Chapter 8 EOC
Due May 18 at 11:59pm | 79 pts

Addition of H₂O (SkillBuilders 8.3 & 8.4)

[8.6 Acid-Catalyzed Hydration](#)

Lightboard Video: [A Mechanism for Acid-Catalyzed Hydration of Alkenes](#)

Interactive Graphic: [Mechanism 8.2 Acid-Catalyzed Hydration](#)

[8.7 Oxymercuration-Demercuration](#)

[8.8 Hydroboration-Oxidation](#)

Lightboard Video: [A Mechanism for Hydroboration Oxidation of Alkenes](#)

Interactive Graphic: [Mechanism 8.3 Hydroboration-Oxidation](#)

Solved-Problem Videos:

[SkillBuilder 8.3, Problem 8.15a](#)

[SkillBuilder 8.3, Problem 8.15b](#)

[SkillBuilder 8.4, Problem 8.21](#)

Question List Student Progress

SkillBuilders 8.3, 8.4 & Conc. Chkpt. 8.12, 8.13, 8.16-8.19

Question 1 --/4	Question 2 --/4	Question 3 --/1	Question 4 --/1
Question 5 --/1	Question 6 --/1	Question 7 --/1	Question 8 --/1

Keeping Students Motivated

15% of grade:
weekly “Friday5” reflection
and study groups

Motivate Lab training (GPS)

- Growth Mindset
- Purpose & Relevance
- Sense of Belonging

Travis Maddry

travis@motivatelab.org



Encouraging a Growth Mindset

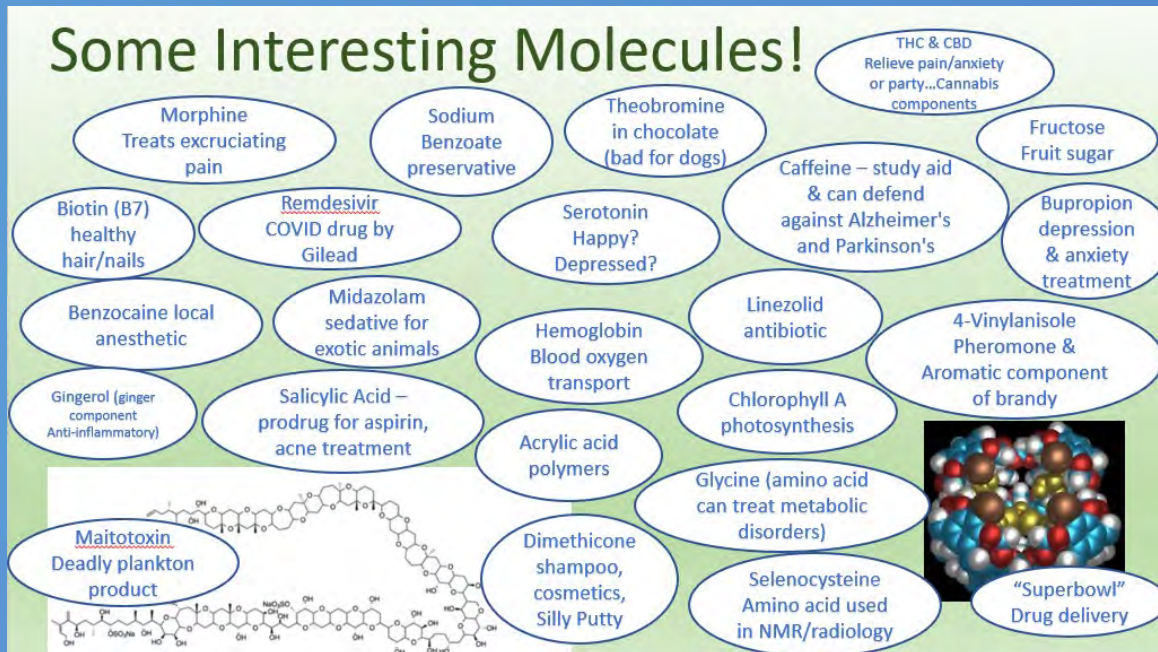
- Value formative assessment
(points for textbook problems!)
- Discuss study strategies
- Drop lowest exam
- Metacognitive exercises
 - Exam Wrapper
 - Weekly study plan check-in



[resources](#)

Focusing on Purpose and Relevance

- Weekly reflection assignments
 - Find/share an interesting molecule
 - Tell me why this course matters to you
- Share stories of former students



CPP Grad & Veterinarian Kim De La Peza

- B.S. Animal Science CPP 2008
- D.V.M. Michigan State 2012
- Emergency Room Vet
- VCA Animal Hospital

What will your story be?



Building Community, Sense of Belonging

Introduction video

- Introduce yourself, share your passion

Course Padlet

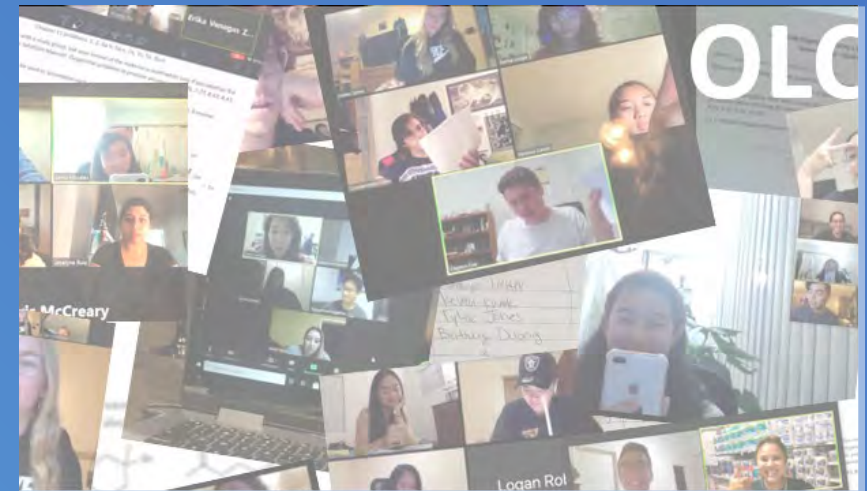
- Students can introduce themselves

Encourage study groups

- Organic Learning Community (OLC)
- Offer credit for weekly report w/selfie pic

Foster communication

- Discussion boards, Discord, Google Voice



Friday5 Prompts (Gradescope)

- Create a Concept Map
- Add a Zoom Profile picture!
- Mental Health check-in
- Start-Stop-Continue (mid-semester feedback)
- Showing gratitude
- Upload a picture of your flash cards
- Celebrate NCW (explore webpage)
- Favorite volunteer activities?
YouTuber? Autumn activities?



I am grateful for the relationships we have built!

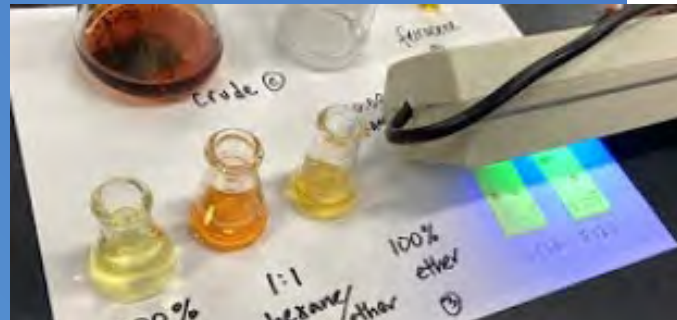
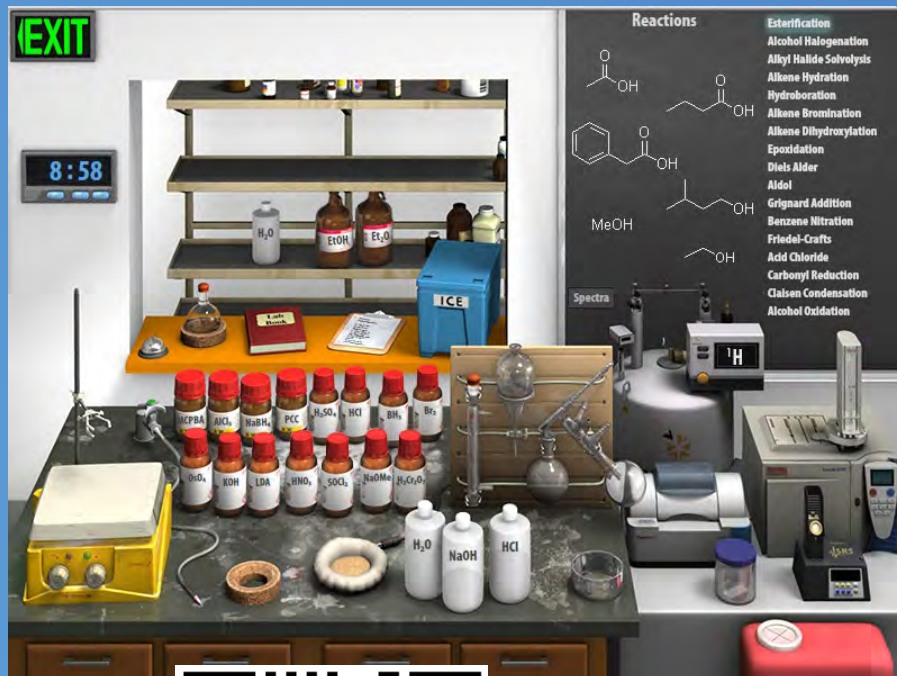
Professor Starkey,

I know you are a cat mom so I thought I would share this photo of my kitten! I found her with my chemistry flashcards one morning in her favorite box. Not sure how she was able to pull that off. Hope you enjoyed



Resources/Ideas for Virtual “Labs”

BeyondLabz (\$25/year)



acylation of ferrocene

During this step, is the **eugenol** in the organic or aqueous layer?

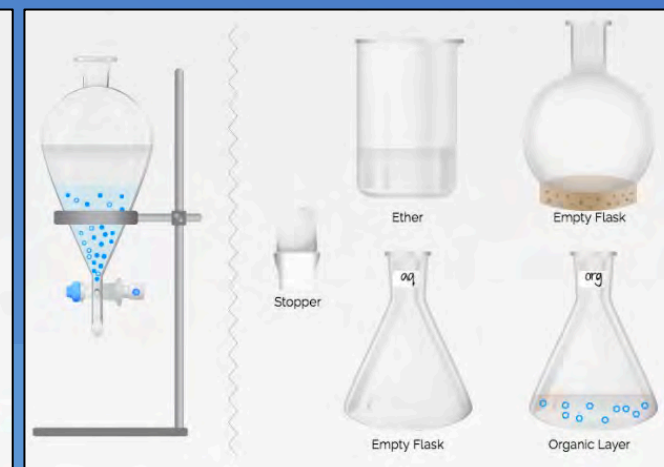
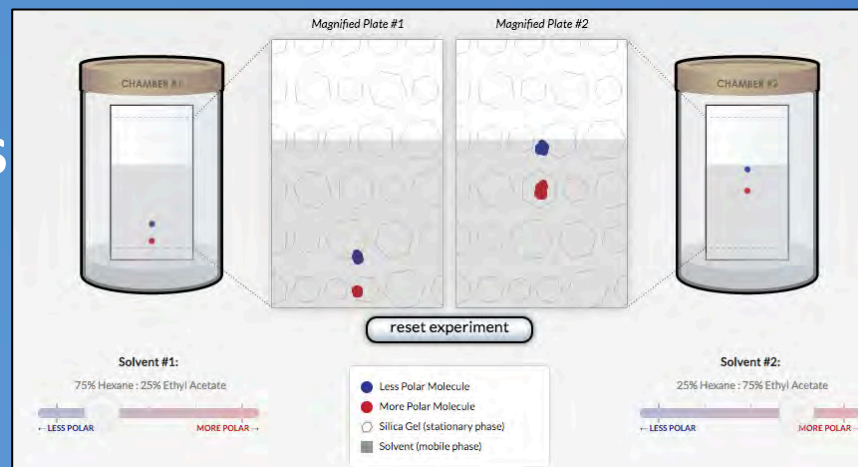


“Inquisitive” lab demos
eugenol video has over
1,800 views since March!




COVID-19 remote
teaching resources

Animations
TLC &
Extraction



Organic Chemistry Active Learning: Worksheets, Clicker Questions, BeyondLabz...

<https://www.cpp.edu/~lsstarkey/local>



Library for Organic Chemistry Active Learning

Created by [Laurie Starkey](#), Professor of Organic Chemistry at [Cal Poly Pomona](#)
To contribute materials, please contact Laurie (and thank you!) lsstarkey@cpp.edu

******COVID-19 & Remote Teaching Resources******

Active-Learning Resources can also be found here: organicERs.org | MERLOT.org

Clicker Questions:

Bonding/Structure, Acid-Base, Nomenclature Lewis Structures & Line Drawings Resonance & Hybridization/3-D Acid-Base MO Theory Physical Properties Nomenclature Sites of Unsaturation (DU) Conformations of Alkanes & Cyclohexanes	Stereochem, Radicals, Study of Reactions Chirality & Optical Activity R/S, E/Z Nomenclature Stereochemical Relationships Radical Reactions Thermodynamics, Kinetics & Reaction Coordinate Diagrams	Substitution & Elimination Alkene/Alkyne Reactions Substitution Reactions (Sn1/Sn2) Elimination Reactions (E1/E2) Substitution vs. Elimination Dehydration of Alcohols Alkene Additions and Oxidation Alkyne Reactions Synthesis Strategies (Klein Ch. 11) **NEW**	Alcohols, Ethers & Epoxides Alcohol Reactions Grignard & Hydride Reagents Epoxide & Ether Reactions Alkoxides & Thiols Syntheses Involving Alcohols
Carbonyl Chemistry	Alpha-Carbon Chemistry	Conj. Systems, Aromaticity	Additional Topics



ChemistryConnected YouTube Channel

Consider sharing your content on a YouTube channel! If not buried in LMS, videos can be accessed by your students after current semester... and by other students around the world! **FACULTY** can provide quality content on YouTube.

<http://www.youtube.com/user/ChemistryConnected>



ChemistryConnected

1.85K subscribers

HOME

VIDEOS

PLAYLISTS

COMMUNITY

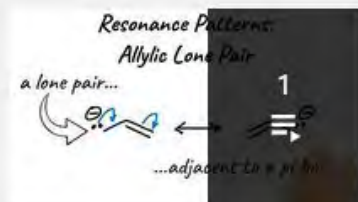
CHANNELS

ABOUT



Created playlists

SORT BY



Resonance Patterns

VIEW FULL PLAYLIST



Friedel-Crafts Acylation of Ferrocene

VIEW FULL PLAYLIST



Eugenol Isolation from Cloves

VIEW FULL PLAYLIST



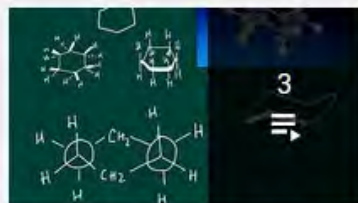
Solving Synthesis Problems using Aldol, Claisen, and Michael

VIEW FULL PLAYLIST



Resonance problems - set 1

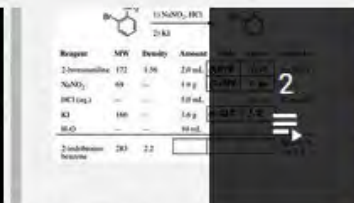
VIEW FULL PLAYLIST



Drawing Cyclohexane Chair Conformations



Drawing 3-D Sketches of Organic Molecules



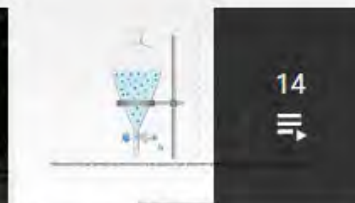
Lab Notebook

VIEW FULL PLAYLIST



Hands-on Experiments for Kids

VIEW FULL PLAYLIST



Extraction Tutorial

VIEW FULL PLAYLIST

Making it Work: Staying Happy, Healthy & Sane

Be Flexible

Be Open to Try
New Things

Be Patient

Be Honest
with Students

Don't Reinvent
the Wheel

Find the
Silver Linings

Don't Obsess
Over Cheating

Connect with
Colleagues

Don't Try to be
a Superhero

Use Facebook
Groups

#AllinThisTogether