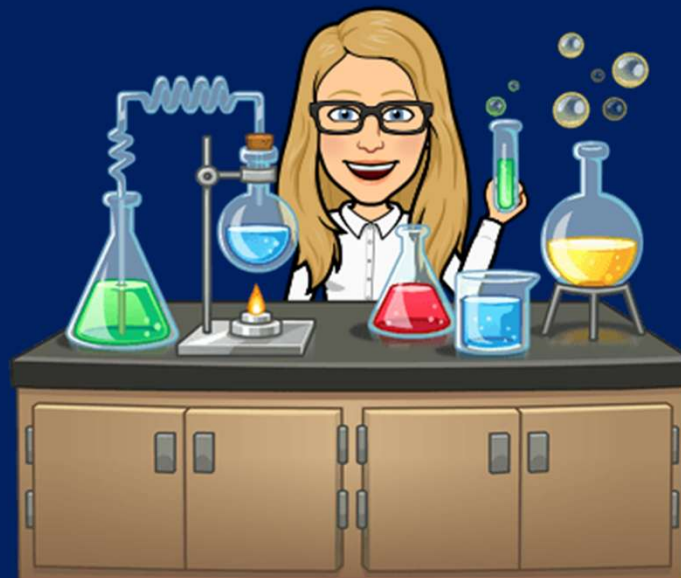


For voting, go to: <https://pollev.com/lauriestarke263>
or text LAURIESTARKE263 to 37607 to join poll



Dr. Laurie S. Starkey
Cal Poly Pomona

CHM 3140 Organic Chemistry I
Announcements 3/6/25

Today's Topic: NMR Spectroscopy (Chapter 15, Part 1)

Chapter 15

- ✓ Watch
- ✓ ~~Read~~
- ✓ Practice

Daily To-Do

Part 1 (will be on Exam II)

- **Optional Reading:** skim through Klein Chapter 15, sections 1-9, 11, and 12
- Watch ALL FOUR flipped lectures
- Work through SkillBuilders 15.1 - 15.7 and 15.9.
- See suggested [Chapter 15 EOC problems](#) on WileyPLUS (auto-graded) and/or on paper (self grade, using Solutions Manual). The following Chapter 15 problems are good practice for Exam II:
1-22, 26, 35-39, 41, 42, 45, 47, 48, 50, 63-71.

Flipped Lectures

- [Part 1a - Introduction to NMR Spectroscopy](#)
30 minutes, skeleton notes pages 15-1 to 15-2
- [Part 1b - Number of Signals & Peak Integration](#)
22 minutes, skeleton notes page 15-3
- [Part 1c - Chemical Shifts \(ppm\)](#)
25 minutes, skeleton notes pages 15-4 to 15-5
- [Part 1d - Splitting Patterns & Predicting an NMR Spectrum](#)
41 minutes, skeleton notes pages 15-6 to 15-7

Ch. 15 Text Problems (Part 1 only)

Exam II assignments*	
SkillBuilder/EOC Ch.4	8
SkillBuilder/EOC Ch.5	8
SkillBuilder/EOC Ch.15	5
<i>"Free red ink" homework</i>	
Newman Proj.	3
Canvas quiz - R/S	3
Canvas quiz - Compare	3

**Work on SkillBuilders
and/or EOC problems**
WP and/or handwritten

Module 15: Nuclear Magnetic Resonance (NMR) Spectroscopy	
DID YOU EVER WONDER...whether it is scientifically possible for a human being to levitate?	
15.1 - 15.4: Proton NMR - Characteristics of a Spectrum, & Number of Signals (SkillBuilders 15.1 & 15.2)	55 pts
15.5: Proton NMR - Chemical Shift (SkillBuilder 15.3)	30 pts
15.6: Proton NMR - Integration (SkillBuilder 15.4)	20 pts
15.7: Proton NMR - Multiplicity (SkillBuilder 15.5)	35 pts
15.8: Drawing the Expected Proton NMR of a Compound (SkillBuilder 15.6)	15 pts
15.9: Using Proton NMR to Distinguish between Compounds (SkillBuilder 15.7)	20 pts
15.11 & 15.12: C-13 NMR Spectroscopy (SkillBuilder 15.9)	30 pts
End of Chapter Problems: Chapter 15 (Part 1)	85 pts
15.10 Analyzing a Proton NMR Spectrum (SkillBuilder 15.8, Exam III)	25 pts
End of Chapter Problems: Chapter 15 (Part 2)	15 pts
NMR Part 2: Exam III	

Exam II Thurs., 3/13 (Chapters 4, 5, 15)

CHM 3140 Organic Chemistry I, Dr. Laurie S. Starkey, Spring 2025 Tentative Schedule (Chapter and Worksheet/Step # given for each day)					
Week	Mon	Tues	Wed	Thurs	Fri
5	2/17	2/18 Ch. 4 #1	2/19	2/20 Ch. 4 #2	2/21
6	2/24	2/25 Ch. 5 #1	2/26	2/27 Ch. 5 #2	2/28
7	3/3	3/4 Ch. 5 #3	3/5	3/6 Ch.15 #1	3/7
8	3/10	3/11 Exam Review	3/12	3/13 Exam II	3/14

75-minute written exam

- no Scantron, no lecture after

No notes/calculators/model kits allowed

- Bring pencil(s), eraser

Sample exams on course homepage

- See typical length, format

You must come to your registered section

- 10 am or 3 pm or 5 pm (Check BroncoDirect!)

Extra office hour/review session (lsstarkey OH Zoom)

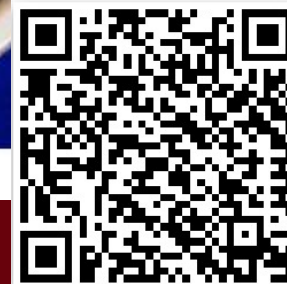
- Tuesday 3/11, 9-10 pm

Friday 3/14 – Happy Pi Day!



Celebrate Pi Day by talking pi while eating pie with mathematician Tara Long at revision3.com. Handout

Five ways to celebrate Pi Day ([USA Today](http://www.usatoday.com))



Sunday
(2 am)
*spring
forward*
1 hour!



Start...Stop...Continue

Flipped classroom ✓

Lecture videos/notes ✓

SkillBuilders ✓

Continue review session ✓

Continue free red ink ✓

Answer key to
sample exams ✗

Add Canvas due dates ✗

Too many websites...

...thanks for all the resources

OLC is great...

...group work isn't for me

Some Interesting Molecules!

THC & CBD
Relieve pain/anxiety
or party...Cannabis
components

Fructose
Fruit sugar

Morphine
Treats excruciating
pain

Sodium Benzoate preservative

Theobromine
in chocolate
(bad for dogs)

Caffeine – study aid
& can defend
against Alzheimer's
and Parkinson's

Bupropion
depression
& anxiety
treatment

Biotin (B7)
healthy
hair/nails

Remdesivir COVID drug by Gilead

Serotonin
Happy?
Depressed?

Benzocaine local anesthetic

Midazolam sedative for exotic animals

Hemoglobin
Blood oxygen
transport

Linezolid
antibiotic

4-Vinylanisole
Pheromone &
Aromatic component
of brandy

Gingerol (ginger component)
Anti-inflammatory)

Salicylic Acid –
prodrug for aspirin,
acne treatment

Chlorophyll A photosynthesis

Acrylic acid polymers

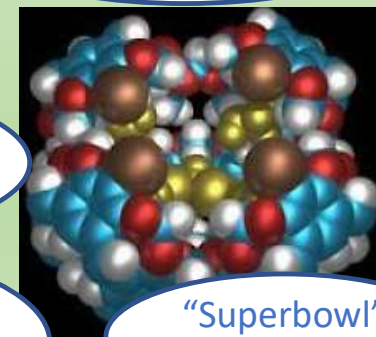
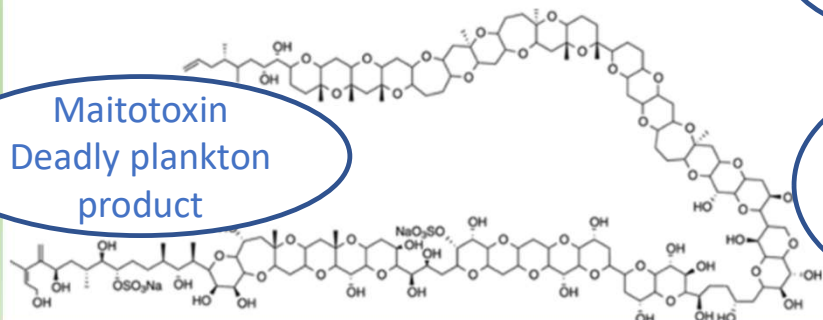
Glycine (amino acid
can treat metabolic
disorders)

Maitotoxin
Deadly plankton
product

Dimethicone
shampoo,
cosmetics,
Silly Putty

Selenocysteine
Amino acid used
in NMR/radiology

“Superbowl”
Drug delivery



More Interesting Molecules!

Vinyl acetate
plastic film for
food packaging

Harman
Treats
anxiety

Geosmin
wet soil
smell

Keratin
protein in
hair/nails

Morphine
poppy plant &
Opium Wars

Lactic Acid
cosmetics

Octinoxate
sunscreen in
lip balm

Congo red
textile dye (1883) &
pH indicator

Fentanyl treats
post-operative
pain

Ebselen
medication for
strokes, may treat
bipolar disorder

Guaifenesin
expectorant

benzoyl peroxide
acne treatment

Maltose &
Xylitol natural
sweeteners

Quebecol –
antioxidant in
maple syrup

Acetone
nail polish
remover

Benzoic acid
discovered by
Nostradamus, used
in snow globes!

Dopamine
released with
pleasant feelings

Thymol –
mouthwash &
mummification!

Capsaicin
chili pepper
(drink milk!)

Kaempferol
reduces
cancer risk

Decaborane –not
organic but rocket
fuel additive

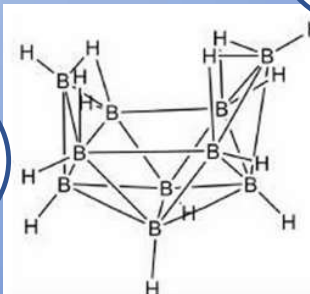
yohimbine -alkaloid
to treat erectile
dysfunction

Acetaminophen
pain reliever

Ketamine
sedation of
large animals
& hallucinogen

Orange B - azo
food dye
(carcinogen?!)

traumatic acid
helps plants heal



Malic acid
crisp apple
flavor