Overview of Organic Chemistry Presentation

- The purpose of this project is for you and your classmates to learn about a variety of topics in organic chemistry as well as the scientists that helped to make these contributions.
- **This presentation will count as a test grade.**

⇨ You will sign up for a topic, which will be a person who has made a significant contribution to organic chemistry and what that contribution was.
A list of topics will be provided for you, although you may add your own topic subject to approval.

⇨ There will be two dates (see below) in Quarter 3 where you must check in with me on the research you have done. **These two checks will count as assignment grades- no late assignments accepted**

Wednesday March 8 : At least 3 sources in proper citation format (30 pts)

Find three GOOD sources for your project and cite them in MLA Format. Turn in a hard copy of the citation sheet. (handwritten or printed is fine; must be printed before class; no emailed copies please)

- See class website for help w/ citation format
- Be sure sources are: reputable (Wikipedia is ok for only 1 of your sources) and useful (do not just use the first 3 websites from a Google search.
- If you feel that you need/ want information from the organic chemistry textbook, sign one out with me

Thursday March 30: Completed Summary Sheet (40 pts)

Turn in a summary sheet for your project (sample summary can be found at the end of this handout)

The summary sheet will require that you have begun to understand and research your topic. Begin your research NOW. Chances are good that most of you will need some help with understanding / sorting through the relevant information for your topic. I am happy to meet with you to help go over your topic, but I can't help everyone at once or the day before it is due. You have ~5 weeks to meet with me from the day you are receiving this paper until the summary sheet is due.

The summary sheet is NOT:

- a list of biographical information only
- a bulleted list of words/ terms related to your topic
- a copy/ paste from websites used for your research

The summary sheet IS:

- an overview of your topic, using headings to divide information into sections
- a source that outlines the key points of your topic and provides key (brief) explanations where necessary
- a source that may include **diagrams / structures** if you feel they are relevant to understanding the topic

*While your Summary Sheet may change prior to giving your formal presentation, the sheet you turn in for this assignment check is more than just a rough draft.

⇨ You will also sign up for a presentation date. Dates are scheduled for Quarter 4. Once you sign up, you are responsible for that date. The only way you can change a date is by:

- Having another student agree to switch with you
- Switching to a date that has not been taken **Must give me 48 hrs notice in this situation*

☆ **If an unforeseen situation arises that will cause you to miss your presentation date, you must contact me ASAP. I will of course be reasonable in these situations.**

☆ **Otherwise, if you are absent on the date of your presentation, you will receive a zero and not be able to make this grade up. Simply "not feeling well" is NOT a valid excuse for missing your date.**

- Presentation will consist of:
  - A 5-7 minute oral presentation, accompanied by a PowerPoint.
  - A one page summary sheet that will be given to your classmates. This is not an essay or written report but rather a summary sheet/ study sheet of the key points of your presentation.
  - A list of resources (at least 3) used cited in MLA format.

- A grading rubric will be provided. 80% of your grade will be assigned by the teacher, 20% of your grade will be based on a structured peer review.

Topics to Select From * You may ADD information to any of these selections *

1. George Olah: carbocations
2. (Hermann) Emil Fischer: Fischer projection, Fischer esterification
3. RB Woodward: natural product synthesis
4. August Kekule: chemical structure, benzene
5. EJ Corey: synthesis, retrosynthetic analysis
6. Otto Diels and Kurt Alder: Diels- Alder reaction
7. Arthur Cope: sigmatropic rearrangement, Cope rearrangement
8. Vladimir Markovnikov: addition reactions, Markovnikov's Rule and its applications
9. Gilbert Lewis: Lewis dot structures and discovery of covalent bond
10. Wilhelm Schlenk: organolithium compounds and the Schlenk flask
11. Friedrich Wöhler: "Father of Organic Chemistry," synthesis of urea
12. Karl Ziegler: organolithium reagents and polymer synthesis (Ziggler-Natta process)
13. Melvin Newman: Newman projections
14. Sir Christopher Ingold: Cahn–Ingold–Prelog priority rules, terms SN_1, SN_2, E_1, and E_2
15. George Hammond: Hammond Postulate, organic photochemistry
16. Louis Pasteur: chirality, tartaric acid enantiomers
17. Francois Grignard: Grignard reagents, Grignard reaction
18. Sir Ewart Jones: organic oxidation reactions, Jones oxidation
19. Adolph Strecker: Strecker synthesis
20. Georg Wittig: ylides, Wittig Olefination reaction
21. Adolf von Bayer: synthesis of indigo blue dye, discoverer of 1st barbitutate
22. Herbert Brown: organoborane compounds/ reactions
23. Alexander Zaitsev: elimination reactions, Zaitsev's Rule
24. Erich Hückel: aromaticity, Hückel's Rule
25. Charles Friedel: alkylation reactions, Friedel-Crafts reaction

ORGANIC LABORATORY TECHNIQUES

26. Mass Spectroscopy
27. Nuclear Magnetic Resonance (NMR)

SAMPLE SUMMARY SHEET

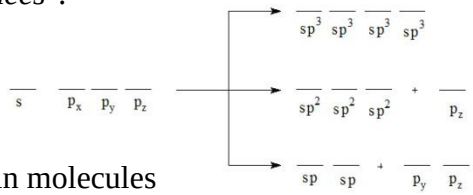
Summary of Important Information About Linus Pauling

Background

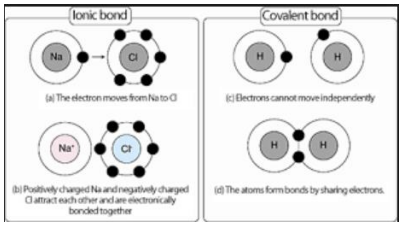
- Born in OR in 1901
- Graduated from Oregon State University in 1922 w/ a degree in chemical engineering
- Graduated from CalTech in 1925 with a PhD in chemistry
- While in graduate school, focused on how the physical and chemical properties of substances are related to the structure of the atoms of which they are composed

Career

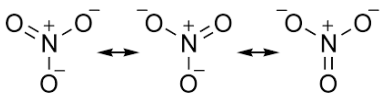
- Went to Europe to study with pioneers in the emerging field of Quantum Chemistry
- Became interested in understanding the electronic structure of the chemical bond
- **1932**: publishes key paper which focuses on hybridization of atomic orbitals and the tetravalency of the carbon atom (the concept that carbon has 4 valence electrons)
- **1939**: publishes renowned textbook *The Nature of the Chemical Bond* which is considered to be one of the most influential chemistry textbooks ever written
- **1954**: awarded Nobel Prize in Chemistry "*for his research into the nature of the chemical bond and its implication to the elucidation of the structure of complex substances".*
- Study of the chemical bond focuses on three major areas:
    - 1.) <u>The concept of hybridized atomic orbitals</u>
        - atomic orbitals can combine in different schemes
        - hybridization of orbitals explains how bonding occurs in molecules



    - 2.) <u>The differentiation between ionic and covalent bonds</u>
        - in ionic bonds, electrons are transferred
        - in covalent bonds, electrons are shared



    - 3.) <u>Bonding in the structures of aromatic hydrocarbons</u>
        - the concept of resonance: that the "true" structure of a molecule can sometimes be thought of as a blend of multiple structures



Interesting Facts

- In 1962, he was awarded the Nobel Peace Prize.
    - The only person to be awarded two unshared Nobel Prizes
    - One of only four individuals to have won more than one Nobel Prize
    - One of only two people to be awarded Nobel Prizes in different fields
- Later in life was criticized as being "arguably the world's greatest quack" for his beliefs that dietary supplements could cure diseases
    - Namely, that Vitamin C could prevent colds

ORGANIC CHEMISTRY PRESENTATION RUBRIC * Same rubric will be used by teacher as well as students for peer review

Total (100 pts)	Superior	Adequate	Minimal
Content (35 pts)	**(30 – 35 pts)** - Overview of topic is presented - Good variety of information is provided - Importance of topic to field of organic chemistry is stressed - Sources are cited in the correct format	**(20 – 30 pts)** - Overview of topic is presented - Some variety of information is provided - Importance of topic to field of organic chemistry is present - Sources are cited in the correct format	(**0 – 20 pts)** - Overview of topic is missing - Little to no variety of information is provided (ex. focus is solely in biography, etc) - Importance of topic to field of organic chemistry is not evident - Sources are not or inappropriately cited
PowerPoint (20 pts)	**(15 – 20 pts)** - Font/ slides are easy to read - color scheme is appropriate - slides are not overly crowded - key points are listed as opposed to entire sentences/ paragraphs - good mix of text and other visual components	**(10 – 15 pts)** - Font/ slides are readable - color scheme is appropriate - slides are "busy" - key points are mostly summarized - some visual components are present	**(0 – 10 pts)** - Font/ slides are difficult to read - color scheme is inappropriate or absent - slides are crowded - sentence format is used as opposed to key point summaries
Delivery (15 pts)	**(12 - 15 pts)** Speaker: - is easily understood/ heard - good variety in volume, rate, and inflection of voice - emphasizes key points - exhibits few audible pauses "uhs, ahs, ums"	**(8 – 12 pts)** Speaker: - is mostly easily understood/ heard - some variety in volume, rate, and inflection of voice - emphasizes key points - exhibits several audible pauses "uhs, ahs, ums"	**(0 – 8 pts)** Speaker: - is difficult to understood/ heard - little to no variety in volume, rate, and inflection of voice - no/ little emphasis of key points - exhibits many audible pauses "uhs, ahs, ums"
Organization (15 pts)	**(12 – 15 pts)** - The message is organized. - The speaker helps the listener understand the sequence and relationships of ideas by using organizational aids such as announcing the topic, previewing the organization, using transitions, and summarizing.	**(8 – 12 pts)** - The message is organized. - The listener has no difficulty understanding the sequence and relationships among the ideas in the message. - The ideas in the message can be outlined	**(0 – 8 pts)** - The organization of the message is mixed up and random. - The listener must make some assumptions about the sequence and relationship of ideas. - The audience is left wondering what they just heard.
Creativity (5 pts)	**(4 – 5 pts)** Very original presentation of material; captures the audience's attention.	**(3 – 4 pts)** Some originality apparent; good variety and blending of materials / media.	**(0 – 3 pts)** Little or no variation; material presented with little originality or interpretation.
Length of Presentation (5 pts)	**(5 pts)** Within one minute of allotted time (5-7 minute target)	**(3 pts)** Within two minutes of allotted time. (5-7 minute target)	**(1 pt)** Within three minutes of allotted time . (5-7 minute target)
Summary Sheet (5 pts)	**(4 – 5 pts)** Well organized and outlined with headings, includes key points, is not just a "copy/ paste" of PowerPoint	**(3 – 4 pts)** Organized and outlined, includes key points, is not just a "copy/ paste" of PowerPoint	**(0 – 3 pts)** Not well organized, mainly a "copy/ paste" of PowerPoint