

**25th  
International  
Conference on  
Artificial  
Intelligence in  
Education**



**Team 5 & 8**

**MapMyStudy**

a toolbox for helping students and teachers  
about Artificial Intelligence

# Agenda

1. Meet the team
2. Problem introduction
3. Our solutions
  - a. For teachers
  - b. For students
4. Future works

# Team

Vitor Negromonte

Maria Gabrielly

Matias Oliveira

Karine Alves

Andrew Silva



# Introduction

- AI is everywhere
- Popularization and increasing investment
- **How to make accessible to people, especially in a plural digitally illiterate society, and how can we make AI a tool for education?**

Our solutions

# For teachers

Develop a guideline to assist teachers in:

- Demystifying AI concepts
- Providing **practical strategies** for educational use
- Presenting real-world use cases

Check the guideline



# How to Facilitate Student Practice?

We benchmarked on 3 AI platform solutions, who promises to improve study , they are:

- StudioSets AI
- NotebookLM
- ChatGPT 4.o



# How to Facilitate Student Practice?

We tested all solutions with an use case material about Organic Chemistry, trying to simulate student usage creating resources for their improvement, as like:

- Summary
- Flashcards
- Quiz
- Multiple choices questions
- FAQ
- Study Guide
- Briefing Case.



**StudySets.AI**

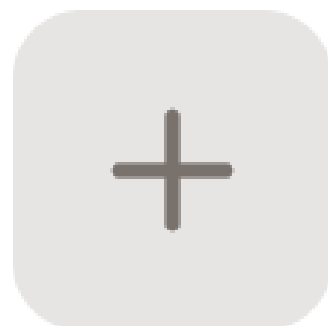
# How to Facilitate Student Practice?



**StudySets.AI**

## What would you like to study?

Upload materials to base your study set on.



Create



Premium Sets



Upgrade



Books



Slides



YouTube



Websites



Unit 14- Organic Che...  
PDF

Continue



# StudySets.AI



Organic Chemistry



Create study set



## Create Summary

organic functions and hysomeria

Create

# How to Facilitate Student Practice?

Unit 14- Organic Chemistry.pptx

Summary

Key Insights

Transcript

## Exploring Organic Chemistry

Saved

Overview of key concepts in organic chemistry, including hydrocarbons, naming, isomerism, functional groups, and organic reactions.

- **Organic Chemistry Basics:** Organic chemistry focuses on carbon and its compounds, including hydrocarbons like gasoline and oil, known for their unique properties such as slow reactivity and low solubility in water. Carbon's ability to form stable bonds due to its 4 valence electrons is a key feature that distinguishes organic compounds.
- **Hydrocarbons and Chemical Formulas:** Organic compounds containing only carbon and hydrogen can be classified into different types based on their structures, such as alkanes, alkenes, and alkynes, each with distinct properties and formulas. Various chemical formulas like molecular, structural, and condensed formulas are used to represent these compounds accurately.
- **Naming and Isomerism:** The naming of hydrocarbons follows specific rules outlined by the IUPAC system, depending on the type of hydrocarbon and its structure. Isomers are compounds with the same molecular formula but different structures; they are crucial in organic chemistry and can be created by branching carbon chains or moving

Chat



Hi, I'm Flash!

You can ask me questions about this page.

→ Give me a hint

→ Tell me more

Send a message.



# StudySets.AI

## How to Facilitate Student Practice?

Unit 14- Organic Chemistry.pptx

Summary

Key Insights

Transcript

Organic chemistry focuses on carbon compounds like hydrocarbons known for unique properties.

Carbon's 4 valence electrons enable stable bond formation in organic compounds.

Hydrocarbons can be classified into alkanes, alkenes, and alkynes with distinct properties.


Chemical formulas represent organic compounds accurately, including molecular, structural, and condensed formulas.

Naming of hydrocarbons follows IUPAC rules; isomers have same formula but different structures.

Functional groups in organic compounds dictate unique properties and are identified by suffixes.

Various organic reactions like combustion, substitution, esterification, and polymerization are important processes in organic chemistry.

Chat



Hi, I'm Flash!

You can ask me questions about this page.

→ Give me a hint

→ Tell me more

Unit 14- Organic Chemistry.pptx

Summary

Key Insights

Transcript

Unit 13  
ORGANIC  
CHEMISTRY

Aim #1 What is an organic compound and what are its properties ?

- Organic chemistry is the study of carbon and its compounds
- found in fossil fuels, plants, animals
- Examples include: gasoline, oil, sugars

Hydrocarbon – contains only the elements H & C (TABLE Q)

- Therefore, hydrocarbons are organic, but not all organic compounds are hydrocarbons


Why is carbon so special?

- Has 4 valence electrons, so it can bond 4 times to achieve a stable octet

1. Nonelectrolytes (do not conduct electricity)

2. React slowly because they are

Chat



Hi, I'm Flash!

You can ask me questions about this page.

→ Give me a hint

→ Tell me more

Send a message.

→



# StudySets.AI

## How to Facilitate Student Practice?

Unit 14- Organic Chemistry.pptx

Summary

Key Insights

Transcript

Unit 13  
ORGANIC  
CHEMISTRY

Aim #1 What is an organic  
compound and what are its  
properties ?

- ◆ Organic chemistry is the study of carbon and its compounds
- ◆ found in fossil fuels, plants, animals
- ◆ Examples include: gasoline, oil, sugars

- ◆ Hydrocarbon – contains only the elements H & C (TABLE Q)
- ◆ Therefore, hydrocarbons are organic, but not all organic compounds are hydrocarbons

Why is carbon so special?

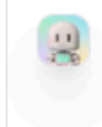
- ◆ Has 4 valence electrons, so it can bond 4 times to achieve a stable octet

1. Nonelectrolytes  
(do not conduct electricity)
2. React slowly  
because they are covalent

Chat



Can you give me a hint on how to solve this problem?



Of course! Could you please provide me with the specific problem or topic you're struggling with so I can give you a relevant hint to guide you through solving it?

Regenerate

Send a message.





# StudySets.AI

## How to Facilitate Student Practice?



How many questions?

1

5

10

20

50

100

Continue



Unit 14- Organic Che...  
PDF

Question

How can we name hydrocarbons according to IUPAC?

Edit Item

Question

How can we name hydrocarbons according to IUPAC?

Answer

To name simple hydrocarbons (straight chain, only \$C\_nH\_{2n+2}\$ and \$C\_nH\_{2n}\$), we will put information from Table P and Table Q together. Table P shows the prefix to determine how many

Delete

Save



Generate



1

2

3

4

...

10





# StudySets.AI

## How to Facilitate Student Practice?



Unit 14- Organic Che...  
PDF

### Question

How can we represent 1, 1-difluoroethane in a structural formula?

Type your answer...

Answer

Don't Know



Generate



<

1

2

3

4

...

10

>



Unit 14- Organic Che...  
PDF

### Question

How can we represent 1, 1-difluoroethane in a structural formula?

### Your Answer

CH22FCH22F

wrong

### What you got wrong

The subscript numbers indicating the quantity of hydrogen and fluorine atoms are incorrectly formatted. In chemical formulas, subscripts are used to represent the number of atoms of each element. The correct structural formula for 1,1-difluoroethane should have the subscripts properly formatted to indicate two fluorine atoms and a total of four hydrogen atoms.

### Reference Answer

CH<sub>2</sub>FCH<sub>2</sub>F

► From page 29 of [Unit 14- Organic Chemistry.pptx](#)



Unit 14- Organic Che...  
PDF

### Question

What functional group is found in Ester?

### Your Answer

COO

right

### What you got right

The answer COO correctly identifies the functional group found in esters, which is the ester group characterized by a carbon atom double-bonded to an oxygen atom and single-bonded to another oxygen atom that is in turn bonded to a carbon chain.

### Reference Answer

COO

► From page 44 of [Unit 14- Organic Chemistry.pptx](#)

Reset Question



Generate



<

✖

2

3

4

...

10

>





# StudySets.AI



## Create Exercise Set

### Type of exercises

Types of Chemical Formulas

### Amount of exercises

1

5

10

20

50

100

Create

# How to Facilitate Student Practice?

## Exercise 1:

Write the molecular formula for ethanol.

*Ethanol* =



## Exercise 1:

Write the molecular formula for ethanol.

*Ethanol* = 123



⊗ The molecular formula for ethanol should consist of elements and their respective counts. Your answer '123' does not represent a chemical formula. The correct molecular formula for ethanol is  $C_2H_5OH$ .



# NotebookLM EXPERIMENTAL






## How to Facilitate Student Practice?


Upload from

- Drive
- PDF
- Text file
- Copied text
- Web page URL
- Markdown file

NotebookLM EXPERIMENTAL


Untitled notebook


Sources    
Select all sources   
 Unit 14 - Organic Che... 


 Add note


\* Notebook guide


Generate

 FAQ

 Study Guide

 Table of Contents


 Timeline


 Briefing Doc


Summary


**Organic chemistry**, the **study of carbon compounds**, explores the properties, structures, and reactions of these compounds, including hydrocarbons. The text details the characteristics of **hydrocarbons**—classified as **alkanes**, **alkenes**, and **alkynes** based on their bonding—and explains how to name them using the IUPAC system. It also describes **isomers**, molecules with identical formulas but different structures, and **functional groups**, specific atom groups that confer distinct properties to organic compounds. Finally, the text outlines various **organic reactions**, such as combustion, substitution, addition, and polymerization, illustrating the diverse chemical transformations these compounds can undergo.


Suggested questions

 What are the key characteristics and properties of organic compounds?

 How are different types of organic compounds classified and named?

 What are the major types of organic reactions and their significance?

 View Chat

1 source Start typing... 

\* Notebook guide

NotebookLM may still sometimes give inaccurate responses, so you may want to confirm any facts independently.



# How to Facilitate Student Practice?

## Study Guide

New note

Saved response

SAVED RESPONSES ARE VIEW ONLY

### Organic Chemistry Review: Unit 14

#### Study Guide

This guide reviews key concepts of organic chemistry, focusing on hydrocarbons and their properties, nomenclature, isomerism, functional groups, and reactions.

#### Quiz

**Instructions:** Answer the following questions in 2-3 sentences each.

1. What distinguishes organic compounds from inorganic compounds, and provide two examples of organic compounds found in everyday life.
2. Explain the unique bonding ability of carbon and how it contributes to the vast diversity of organic compounds.
3. Differentiate between molecular, structural, and condensed formulas in representing organic molecules. Provide an example of each for butane.
4. What is a homologous series, and how does it apply to alkanes, alkenes, and alkynes?
5. Define isomers and explain why methane, ethane, and propane do not have isomers.
6. Describe three methods of creating isomers in organic molecules.
7. What is a functional group, and how does it affect the properties of an organic compound? Provide two examples.
8. Explain the difference in bonding between alkanes and alkenes, and how this affects their reactivity.
9. Write the general formula for an alkane, an alkene, and an alkyne.
10. What are the products of complete combustion of a hydrocarbon?

Answer Key

## FAQ

Untitled notebook

Add note

Select all

Saved Response

New note

Saved Response

New note

New note

Saved response

SAVED RESPONSES ARE VIEW ONLY

### Organic Chemistry: Your Questions Answered

Here are the answers to some frequently asked questions about organic chemistry:

**1. What makes a compound "organic"? What's so special about carbon?**  
Organic chemistry focuses on compounds containing carbon. Carbon's ability to form **four bonds** with other atoms, including itself, allows it to create a vast array of complex structures, from simple chains to intricate rings. This versatility makes carbon the backbone of life's essential molecules.

**2. Are all organic compounds hydrocarbons? What are some examples of organic compounds?**  
While all hydrocarbons (compounds containing only hydrogen and carbon) are organic, not all organic compounds are hydrocarbons. Organic compounds encompass a broader category, including those with additional elements like oxygen, nitrogen, and halogens. Some common examples include:

- **Hydrocarbons:** Gasoline, oil, methane
- **Other organic compounds:** Sugars, proteins, DNA, alcohols

**3. What are the key properties of organic compounds?**  
Organic compounds share some common characteristics:

- **Poor electrical conductivity:** They are typically non-electrolytes.
- **Slow reaction rates:** Their covalent bonding leads to slower reactions compared to ionic compounds.
- **Low melting and boiling points:** Generally lower than inorganic compounds due to weaker intermolecular forces.
- **Limited water solubility:** Most are insoluble or immiscible in water.

**4. What are isomers, and why are they significant?**



# How to Facilitate Student Practice?

## Briefing Case

New note  
Saved response

SAVED RESPONSES ARE VIEW ONLY

### Briefing Doc: Introduction to Organic Chemistry

This briefing doc reviews key themes and concepts related to organic chemistry, based on the provided excerpts from "Unit 14-Organic Chemistry.pptx.pdf".

#### What is Organic Chemistry?

- Organic chemistry focuses on the study of carbon and its compounds.
  - These compounds are found in various sources, including fossil fuels, plants, and animals.
  - Examples include gasoline, oil, and sugars.
- Hydrocarbons**, consisting solely of hydrogen (H) and carbon (C), are a subset of organic compounds.
  - Importantly, while all hydrocarbons are organic compounds, not all organic compounds are hydrocarbons.

#### The Uniqueness of Carbon:

- Carbon's ability to form diverse compounds stems from its **four valence electrons**, enabling it to form **four bonds** to achieve a stable octet. This unique characteristic allows carbon to create a wide array of chain and ring structures.

#### Properties of Organic Compounds:

- Generally characterized as **non-electrolytes**, meaning they do not conduct electricity.
- Exhibit **slow reaction rates** due to their covalent bonding (nonmetal + nonmetal).
- Typically possess **low melting and boiling points**.
- Tend to be **insoluble and immiscible in water**.

#### Representing Organic Compounds:

Molecular Formulas Denote the number of atoms of each element in a compound (e.g., Propane: C<sub>3</sub>H<sub>8</sub>)

## Timeline

New note  
Saved response

SAVED RESPONSES ARE VIEW ONLY

### Key Concepts:

- Organic Chemistry:** The study of carbon-containing compounds.
- Hydrocarbons:** Compounds containing only hydrogen and carbon.
- Properties of Organic Compounds:** Generally non-electrolytes, slow-reacting, low melting/boiling points, and often insoluble in water.
- Chemical Formulas:** Molecular (number of atoms), Structural (arrangement of atoms), and Condensed (combination).
- Homologous Series:** Alkanes (single bonds), Alkenes (double bonds), Alkynes (triple bonds).
- IUPAC Naming:** Rules for naming hydrocarbons based on chain length, bond type, and substituents.
- Isomers:** Compounds with the same molecular formula but different structures.
- Substituted Hydrocarbons:** Naming and drawing hydrocarbons with halogens or alkyl groups attached.
- Functional Groups:** Specific groups of atoms that give organic compounds characteristic properties (e.g., halides, alcohols, acids, aldehydes, ketones, esters, amines, amides, ethers).
- Aromatic Hydrocarbons:** Compounds containing a benzene ring (e.g., benzene, methylbenzene).
- Organic Reactions:** Combustion, Substitution, Addition, Esterification, Saponification, Fermentation, Polymerization.

### Timeline:

A timeline is not applicable to this source as it presents chemical principles rather than a sequence of historical events.

### Cast of Characters:

There is no cast of characters in this educational material. It does mention general groups of compounds (alkanes, alkenes, alkynes, etc.) but does not focus on specific individuals or their contributions to the field.



# ChatGPT



Unit 14- Organic Chemistry.pptx.pdf  
PDF

Summary the content with the main topic to be used as a mind map



The document "Unit 14- Organic Chemistry" covers various topics related to organic chemistry. Here is a summary of the main topics that can be used to create a mind map:

## 1. Introduction to Organic Chemistry

- Definition and importance of organic compounds
- Properties of organic compounds

## 2. Types of Hydrocarbons

- **Alkanes:** Single bonds, saturated hydrocarbons
- **Alkenes:** Double bonds, unsaturated hydrocarbons
- **Alkynes:** Triple bonds, unsaturated hydrocarbons

# How to Facilitate Student Practice?

Create 10 flash cards for me to study



Here are 10 flashcards based on the content of the "Unit 14- Organic Chemistry" document:

### Flashcard 1

**Q: What is organic chemistry?**

A: Organic chemistry is the study of carbon and its compounds, found in fossil fuels, plants, and animals.

### Flashcard 2

**Q: What are hydrocarbons?**

A: Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms.

### Flashcard 3

**Q: What is the general formula for alkanes?**

A: The general formula for alkanes is  $C_nH_{2n+2}$ , and they contain single bonds (saturated hydrocarbons).

### Flashcard 4

**Q: How are alkenes different from alkanes?**

A: Alkenes contain at least one double bond ( $C=C$ ) and have the general formula  $C_nH_{2n}$ , making them unsaturated hydrocarbons.

### Flashcard 5

**Q: Define isomers.**

A: Isomers are compounds with the same molecular formula but different structural arrangements, resulting in different chemical and physical properties.



Message ChatGPT



# ChatGPT

Create a Quiz to test my knowledge



Sure, here's a quiz to test your knowledge of organic chemistry based on the document:

## Organic Chemistry Quiz

### Multiple Choice Questions

1. What is the study of organic chemistry primarily concerned with?

- a) Metals and their reactions
- b) Water and its properties
- c) Carbon and its compounds
- d) Gases and their behaviors

2. Which of the following is a characteristic property of organic compounds?

- a) High melting point
- b) Soluble in water
- c) Non-electrolytes
- d) Reacts quickly

3. What is the general formula for alkenes?

- a)  $C_nH_{2n+2}$
- b)  $C_nH_{2n}$
- c)  $C_nH_{2n-2}$
- d)  $C_nH_{2n+1}$



Message ChatGPT



ChatGPT can make mistakes. Check important info.

# How to Facilitate Student Practice?

Create a FAQ about the content



Here is a FAQ based on the content of the "Unit 14- Organic Chemistry" document:

## Organic Chemistry FAQ

### General Concepts

**Q1: What is organic chemistry?**

A: Organic chemistry is the study of carbon and its compounds, which are found in fossil fuels, plants, animals, and many everyday materials such as gasoline, oil, and sugars.

**Q2: Why is carbon so special in organic chemistry?**

A: Carbon has four valence electrons, allowing it to form four stable covalent bonds with other atoms, making it incredibly versatile in forming a variety of complex molecules.

### Hydrocarbons

**Q3: What are hydrocarbons?**

A: Hydrocarbons are organic compounds that consist entirely of hydrogen and carbon atoms. They can be categorized into alkanes, alkenes, and alkynes based on the types of bonds between carbon atoms.

**Q4: What is the difference between alkanes, alkenes, and alkynes?**

A: Alkanes have single bonds between carbon atoms and are saturated hydrocarbons (general formula:  $C_nH_{2n+2}$ ). Alkenes have at least one double bond and are unsaturated hydrocarbons (general formula:  $C_nH_{2n}$ ). Alkynes have at least one triple bond and are also unsaturated hydrocarbons (general formula:  $C_nH_{2n-2}$ ).

### Chemical Formulas

**Q5: What are the different types of chemical formulas?**



Message ChatGPT



ChatGPT can make mistakes. Check important info.

# How to Facilitate Student Practice?

StudioSets AI	NotebookLM	ChatGPT 4.o
User friendly	Simple & Easy to use	Only text interface
Multiple options & features	Less, but still good options	It's a general use
Paid & Expensive	It's free	It's free, but with limit

# Help & Future

- Work with Governments to paid for AI tools;
- Analyse opportunities to create our own friendly solution to not pay for others;
- Test in real scenarios;