

Unit  
12

Lesson  
4

**AIM**

- What are functional groups and how are they named?

**AGENDA**

- U12L4 Lesson video
- Functional group notes
- Functional group naming practice

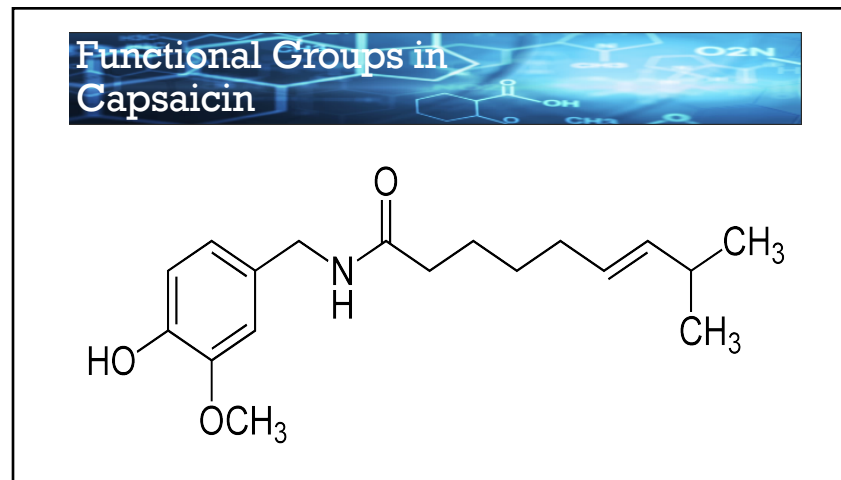
**YOYO**

- Watch the lesson video on YouTube (U12L4)

**HOMEWORK**

- Nothing tonight
- Follow calendar

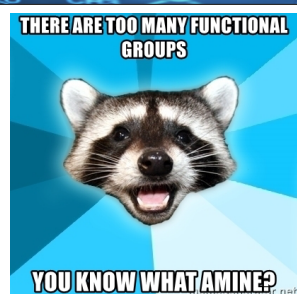
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### What are Functional Groups?

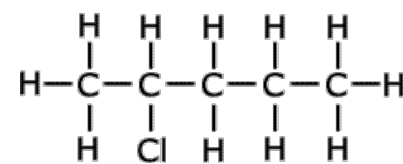
- Functional groups are a group of moles that are attached to organic molecules. The functional groups give the molecule its properties, regardless of what molecule contains it. Different functional groups have different physical and chemical properties.



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### Naming Functional Groups: Halides

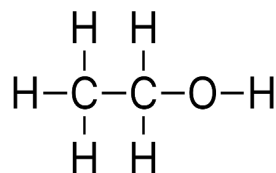
- Have one or more of the halogens as a branched group
- Naming Rules:
  - Name the chain
  - Add the halogen prefix
  - Add location of the halogen
- Condensed Formula:  $\text{CH}_3\text{CHClCH}_2\text{CH}_2\text{CH}_3$
- Name: \_\_\_\_\_



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## Naming Functional Groups: Alcohols

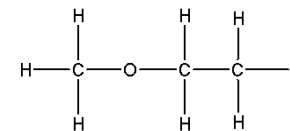
- The functional group is (-OH)
- Naming Rules:
  - Name the chain
  - Add the -ol ending
  - Add the location of the -OH
- Condensed Formula:  $\text{CH}_3\text{CH}_2\text{OH}$
- Name: \_\_\_\_\_



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## Naming Functional Groups: Ether

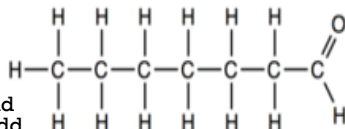
- Ethers are made up of two carbon chains connected by an O in the middle
- Naming Rules:
  - Identify the two chains and name them separately
    - Use Table P for the prefix, and use -yl as the suffix
  - Add the word ether at the end
- Condensed Formula:  $\text{CH}_3\text{OCH}_2\text{CH}_3$
- Name: \_\_\_\_\_



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## Naming Functional Groups: Aldehydes

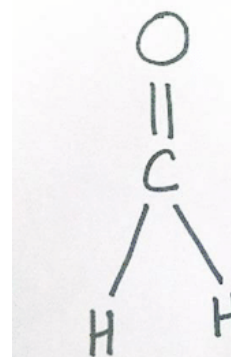
- The aldehyde functional group is a C with a double bond O and an H at the **end** of the molecule
- Naming Rules:
  - Name the chain
  - Add -al suffix (this is always at the end of the molecule, there is no need to add the location)
- Condensed Formula:  
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CHO}$
- Name: \_\_\_\_\_



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FORMALDEHYDE

CASUAL-DEHYDE



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## Naming Functional Groups: Ketones

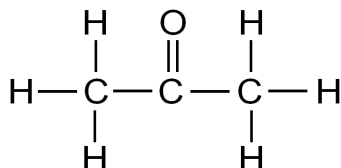
- Ketones have a C double bonded to an O somewhere in the middle of the compound

- Naming Rules:

- Name the chain
- Add the suffix -one
- Add the location of the functional group

- Condensed Formula:  $\text{CH}_3\text{COCH}_3$

- Name: \_\_\_\_\_



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## Naming Functional Groups: Organic Acids

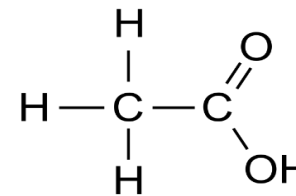
- Organic acids can easily be identified by the  $-\text{COOH}$  group at the end of the molecule

- Naming Rules:

- Name the chain
- Drop the ending and add -oic acid

- Condensed Formula:  $\text{CH}_3\text{COOH}$

- Name: \_\_\_\_\_



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## Naming Functional Groups: Amines

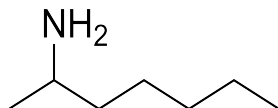
- Amines can be identified by a single N somewhere in the compound

- Naming Rules:

- Name the chain
- Add the suffix -amine
- Give the location of the N

- Condensed Formula:  $\text{CH}_3\text{CHN}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$

- Name: \_\_\_\_\_



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## Naming Functional Groups: Amides

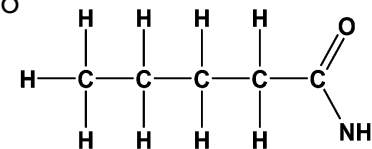
- Amides also have an N, but the N must be connected to an H and a C which is double bonded to an O

- Naming Rules:

- Name the chain
- Add the suffix -amide

- Condensed Formula:  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CONH}_2$

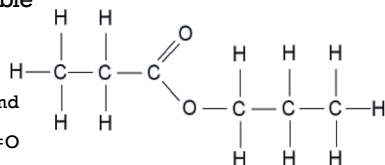
- Name: \_\_\_\_\_



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## Naming Functional Groups: Esters

- Esters are the products of a reaction between an organic acid and an alcohol
- They can be identified by the C double bonded to an O and another O somewhere in the compound
- Naming Rules:
  - Name the chain bonded to the O first and add the -yl suffix
  - Name the chain with the double bond =O last and add the suffix -oate

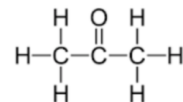


Condensed Formula:  
 $\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_2\text{CH}_3$

Name: \_\_\_\_\_

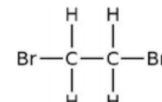
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## Functional Groups



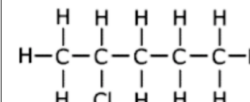
Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_

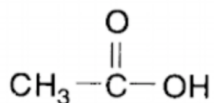


Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_

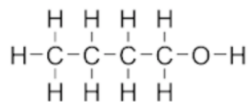
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## Functional Groups



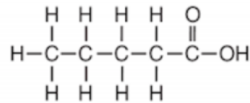
Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_

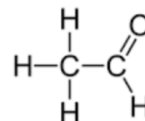


Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_

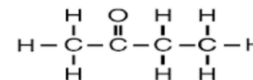
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## Functional Groups



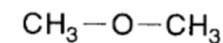
Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



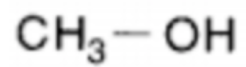
Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_

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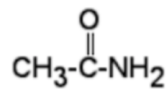


## Functional Groups



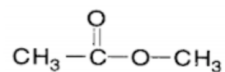
Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_



Functional Group: \_\_\_\_\_

Name: \_\_\_\_\_