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Organic Chemistry Fundamentals (Quick Study Academic)

Quick Study
ACADEMIC

ORGANIC CHEMISTRY FUNDAMENTALS

Types of Organic Compounds

Organic Chemistry is the study of natural and synthetic materials that have carbon atoms as the key chemical element. There are many more than one million known organic compounds.

AROMATIC

- Benzene: C_6H_6
- Aniline: $C_6H_5NH_2$

CO-ADDED

- Methanol: CH_3OH (alcohol)
- Phenol: C_6H_5OH
- Ethanol: C_2H_5OH
- Ethoxide: $C_2H_5O^-$

ETHER

- Ethers: $R-O-R$

ALKANE

- Ethane: C_2H_6
- Propane: C_3H_8
- Isomers: Same C_nH_{2n+2}

ALKENE

- Ethene: C_2H_4
- Propene: C_3H_6
- Isomers: Same C_nH_{2n}

ALKYNE

- Ethyne: C_2H_2

ALCOHOL

- Methanol: CH_3OH
- Ethanol: C_2H_5OH
- Isomers: Same $C_nH_{2n+2}O$

ALDEHYDE

- Formaldehyde: CH_2O
- Acetaldehyde: CH_3CHO
- Isomers: Same $C_nH_{2n}O$

KETONE

- Acetone: CH_3COCH_3
- Isomers: Same $C_nH_{2n}O$

ACID

- Formic Acid: CH_2O_2
- Acetic Acid: CH_3COOH
- Isomers: Same $C_nH_{2n}O_2$

AMINE

- Methylamine: CH_3NH_2
- Dimethylamine: $(CH_3)_2NH$
- Trimethylamine: $(CH_3)_3N$

AMIDE

- Acetamide: CH_3CONH_2

SULFUR ADDED

- Thiols: $R-SH$
- Thioethers: $R-S-R$
- Thioketones: $R-C(=S)-R$
- Thioaldehydes: $R-C(=S)-H$
- Thioacids: $R-C(=S)-OH$
- Thioesters: $R-C(=S)-OR$
- Thioamides: $R-C(=S)-NH_2$

HALOGEN ADDED

- Halides: $R-X$
- Haloalkanes: $R-CH_2-X$
- Haloalkenes: $R-CH=CH-X$
- Haloalkynes: $R-C\equiv C-X$
- Haloaromatics: $R-C_6H_4-X$

Formulas & Isomers

Molecular Formula: Elemental symbols with subscripts denote the composition of a compound.

Empirical Formula: Subscripts denote the simplest chemical composition.

Structural Formula: Shows the arrangement of atoms in a molecule.

Isomers: Compounds with the same molecular formula but different structural formulas.

Constitutional Isomers: Different bonding connectivity (e.g., rings, branches, substituents).

Enantiomers: Mirror images of each other (e.g., left and right hands).

Diastereomers: Not mirror images (e.g., cis and trans isomers).

Chiral Center: A carbon atom bonded to four different groups.

Optical Activity: The ability of a substance to rotate plane-polarized light.

Optical Isomers: Enantiomers that are mirror images of each other.

Optical Rotation: The angle through which plane-polarized light is rotated by a substance.

Optical Density: A measure of the ability of a substance to rotate plane-polarized light.

Optical Isomerism: The property of a molecule to exist as two non-superimposable mirror images.

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Synopsis

Quick Reference for the core essentials of a subject and class that is challenging at best and that many students struggle with. In 6 laminated pages our experienced chemistry author and professor gathered key elements organized and designed to use along with your text and lectures, as a review before testing, or as a memory companion that keeps key answers always at your fingertips. As many students have said "it's a must have" • study tool. Suggested uses:

- Quick Reference "instead of digging into the textbook to find a core answer you need while studying, use the guide to reinforce quickly and repeatedly"
- Memory "refreshing your memory repeatedly is a foundation of studying, have the core answers handy so you can focus on understanding the concepts"
- Test Prep "no student should be cramming, but if you are, there is no better tool for that final review"

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Customer Reviews

My wife loves this thing for studying in her chemistry class. She has several of the other BarCharts and likes them all. Sure, you're paying a few bucks for a laminated piece of cardstock with some stuff printed on it, but it is very intelligently laid out.

I used this with the "Organic Chemistry Reactions" Quickstudy to study for the PCAT. It has been over 7 years since I took organic chemistry, and these were my primary resource to brush up on the subject. I love how portable it is and that all the information you need is in one place.

This is good for Orgo 1 topics. It has very few of what is newly encountered in Orgo 2. However, we all know that we need Orgo 1s knowledge so even if you're in Orgo 2, this little quick reference guide is helpful.

This resource sheet is so helpful when studying for organic chemistry. I purchased it before I began the class and it helped to show what I would be doing and using it as a reference when studying further material saves me time from having to look back in the text book. I will definitely hold on to it when starting Organic 2.

This is a great reference tool for my Chemistry class. Having the necessary formulas and notes in one place is very helpful. I will have a good 2 years of Chemistry and Organic Chemistry to get through to complete my degree. Tools like these are a Godsend.

I purchased this product at my school's bookstore and later returned it because it only contained basic information on the first page. The remaining three were dedicated to reactions, which are also on a separate Quick Study folder. So, if you are looking for basic essentials such as definitions and examples, this is not for you.

Organic chemistry is not easy. It never will be. However this really useful study guide will definitely make your time studying for your exams much more bearable and less frustrating. I used it daily as a reference when I was taking Ochem at my uni.

When it arrived, and I saw it was simply a laminated trifold, I felt ripped off. \$7 for a trifold laminate? The text is almost too small (but if you have 10/10 vision like most college students, it might be readable without glasses..). As far as the content goes, it's decent, but far from profound. Maybe I expect too much these days....

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