



Department of biology



Department of biology

Organic Chemistry

Lecture 4

Alkenes

Alkynes

1. Alkyne group have a triple bond between two carbon atoms.
2. Two hydrogen atoms have been removed from each of two adjacent carbon atoms, thereby allowing the two adjacent carbon atoms to form a triple bond.
3. General formula is: C_nH_{2n-2}
4. Begins with ethyne (acetylene)
5. For Example: C_2H_2

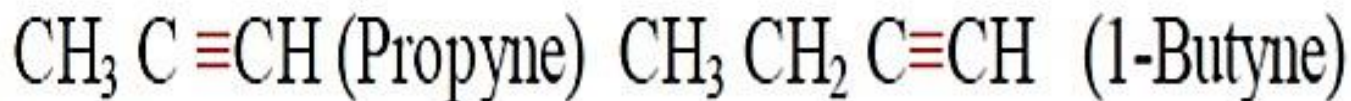


Ethyne (acetylene)

Classification of Alkyne

Alkyne are further classified as terminal or non-terminal alkynes according as the triple bond is present at the carbon chain or within the carbon chain.

Terminal alkynes



Non-Terminal alkynes



IUPAC Rules for Alkyne Nomenclature

The IUPAC rules for naming alkynes are:

- 1) The same as those for alkenes except that the ending is (-**yne**).
- 2) The (**yne**) suffix (ending) indicates an alkyne or cycloalkyne.
- 3) The longest chain chosen for the root name must include both carbon atoms of the triple bond.
- 4) The root chain must be numbered from the end nearest a triple bond carbon atom. If the triple bond is in the center of the chain the nearest substituent rule is used to determine the end where numbering starts.

5) The smaller of the two numbers designating the carbon atoms of the triple bond is used as the triple bond locator.

6) If several multiple bonds are present, each must be assigned a locator number.

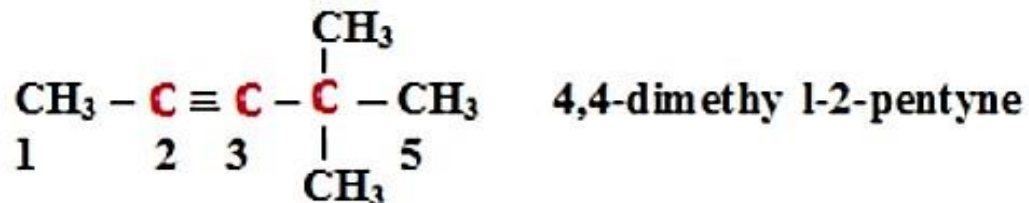
The following examples illustrate the rules:



1-butyne

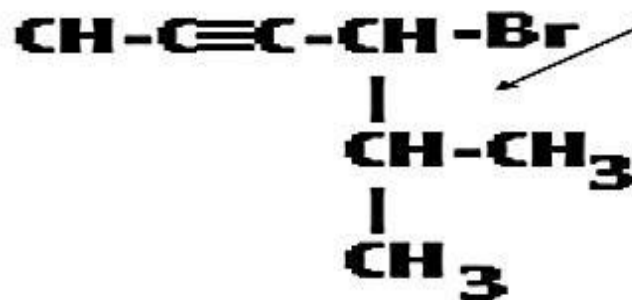


2-butyne

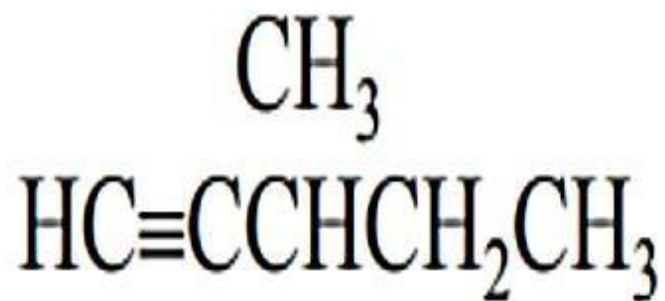


4,4-dimethyl-1-pentyne

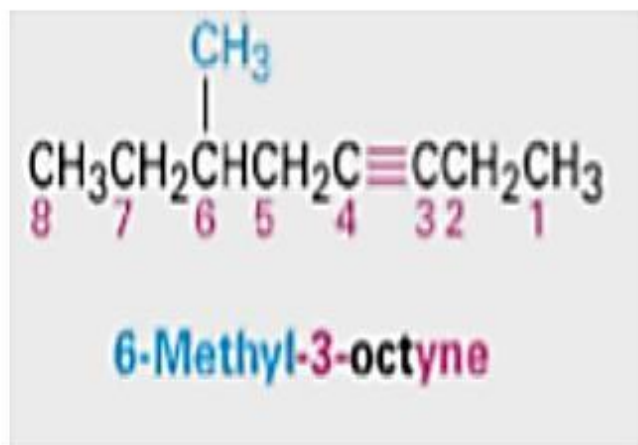
$\text{CH}_3\text{C}\equiv\text{CH}$ methylacetylene (propyne)



4bromo-5-methyl-2-hexyne



3-methyl-1-pentyne



6-Methyl-3-octyne

