

Naming compounds with functional groups

You should be familiar with the rules for naming compounds that contain functional groups (handout)	
Give structures for these common names	
Methyl alcohol	$\text{CH}_3\text{-OH}$
Ethyl alcohol	$\text{CH}_3\text{CH}_2\text{-OH}$
Isopropyl alcohol	$\begin{array}{c} \text{OH} \\ \\ \text{H}_3\text{C}-\text{CH}-\text{CH}_3 \end{array}$
Acetylene	$\text{HC}\equiv\text{CH}$
Formic acid	$\begin{array}{c} \text{O} \\ \\ \text{HC}-\text{OH} \end{array}$
Acetic acid	$\begin{array}{c} \text{O} \\ \\ \text{H}_3\text{C}-\text{C}-\text{OH} \end{array}$

24.3, 24.4

What is an addition reaction?	An addition of a molecule to a double or triple bond. The molecule is broken down in the reaction; the two parts of the molecule are added to either side of the double bond, leaving a single bond (or leaving a double bond when the addition is to a triple bond). Halogenation, and hydrogenation are types of addition reactions. Oxidation and hydrolysis are, in some cases, addition reactions. Polymerization, in some cases, may also proceed via addition reactions.
What is meant by hydrolysis?	Hydrolysis is a reaction in which water is one of the reactants.
What is a condensation reaction?	A reaction in which water is one of the products. Esterification is an example of a condensation reaction. In certain cases an elimination reaction may also be a condensation reaction.
What is an oxidation reaction?	The addition of one or more oxygen atoms to an organic molecule.
List three types of polymers.	Addition polymers (involving alkenes), polyesters (involving a diol plus a dicarboxylic acid), and polyamides (involving a diamine plus a dicarboxylic acid).
Diagram the formation of a polyamide.	$\text{H}_2\text{N}-\text{R}_1-\text{NH}_2 + \text{HO}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$ $\longrightarrow \left[\text{-NH-R}_1\text{-NH-CO-R}_2\text{-CO-} \right]_n + \text{H}_2\text{O}$ <p>Notice that this is a condensation reaction.</p>
What is the general structure of an amino acid? Give examples of amino acids.	<p>An amino acid is made up of an amine group and an organic acid:</p> $\begin{array}{c} \text{amino group} \longrightarrow \boxed{\text{H}_2\text{N}-\text{CH}} \begin{array}{c} \boxed{\text{O}} \\ \parallel \\ \text{C}-\text{OH} \end{array} \longleftarrow \text{acid} \\ \\ \text{X} \end{array}$ <p>where X is a side group. When X is H the amino acid is called “glycine”, when X is CH_3 the name is “alanine”.</p>
In what way are amino acids important? How do they combine?	Amino acids are the building blocks of proteins (a.k.a. polypeptides). Amino acids combine via a peptide bond. A peptide bond forms when the carbon of the acid group bonds to the nitrogen of the amino group (pg. 1035-6). Because a water molecule is displaced this is a condensation reaction.

You should be familiar with the different kinds of organic reactions (see handouts)

You should be familiar with the purpose, observations and conclusions for labs 2.2 and 2.4