

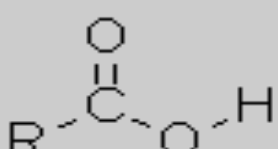
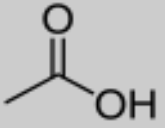
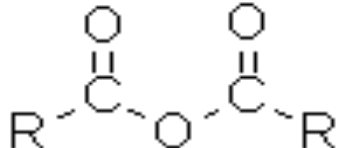
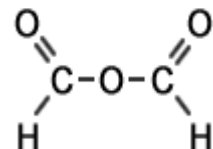
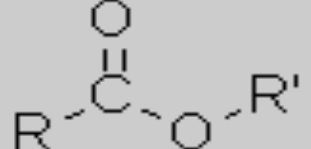
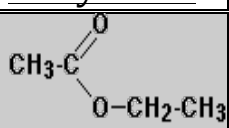
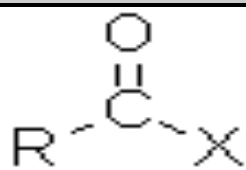
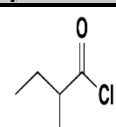
# Functional Groups

Created by: Julio Cesar Torres Orozco

**Background:** Functional groups are portions of molecules that can be recognized and also classified. Usually, in organic chemistry, it is common to see carbon-backboned-molecules that have these functional groups attached to such chain. Functional groups give molecules their properties. It is also important to identify these functional groups in order to name molecules.

## Functional Groups:

The following functional groups will be listed in decreasing priority order:

FUNCTIONAL GROUP	FORMULA	GENERAL FORMULA	SUFFIX	EXAMPLE
Carboxylic Acids		R-COOH	-oic acid	 Ethanoic acid
Acid anhydrides		(RC(O)) <sub>2</sub> O	-oic anhydride	 Formic anhydride
Esters		R-COOR'	-oate	 ethyl ethanoate
Acyl Halides		R-COX	-oyl halide	 2-methylbutanoyl chloride

# Functional Groups

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<b>Amides</b>		<b>RCO<sub>2</sub>NR<sub>2</sub></b>	<b>-amide</b>	 Ethanamide
<b>Nitriles</b>		<b>RCN</b>	<b>Alkane nitrile</b>	 Benzonitrile
<b>Aldehydes</b>		<b>RCOH</b>	<b>-al</b>	 Ethanal
<b>Ketones</b>		<b>RCOR'</b>	<b>-one</b>	 Butanone
<b>Alcohols</b>		<b>ROH</b>	<b>-ol</b>	 Methanol
<b>Thiols</b>		<b>RSH</b>	<b>-thiol</b>	 Ethanethiol
<b>Primary Amines</b>		<b>RNH<sub>2</sub></b>	<b>-amine</b>	 Methanamine

# Functional Groups

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Secondary Amines		$R_2NH$	-amine	 Dimethyl amine
Tertiary Amines		$R_3N$	-amine	 Trimethyl amine
Ethers		$ROR'$	alkyl alkyl ether	 Diethyl ether
Sulfides		$RSR'$	di( <i>substituent</i> ) sulfide	 Dimethyl sulfide
Alkenes		$R_2C=CR_2$	-ene	 Ethene
Alkynes		$RC\equiv CR'$	-yne	 Ethyne
Alkyl Halides		$RX$	halide	$CH_3CH_2BR$ bromoethane (ethyl bromide)

## References:

The following resources were referenced in the creation of this handout: [University of Calgary's page in functional groups](#) and [Wikipedia's functional group images](#)