

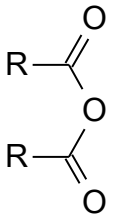
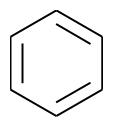
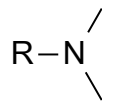
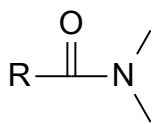
Introduction to functional groups

There are many different function groups involved in the study of organic chemistry. Each will be dealt with by themselves with example, but this document will give an overview of the structure and how they are prepared

Carbonyl groups

NOTE : R = any non-hydrogen group.

Group	Name	Compound ending	Hydrogen bond with itself	Hydrogen bond with water	Prepared by
	Carboxylic acid	-oic acid	Yes, forms dimers	Yes, but solubility depends on the length of the C chain	Oxidation of aldehyde Addition of water to acyl chloride Addition of water to acid anhydride
	Aldehyde	-al	Yes	Yes	Oxidation of alcohol Reduction of carboxylic acid
	Ketone	-one	Yes	No	Reduction of 2° alcohol
	Ether	-ether	Yes	No	Reaction of 2 alcohols (using Na ⁺)
	Ester	-ionate	No	No	Reaction of alcohol and carboxylic acid (using Na ⁺)
 X = halide	Acyl halide	-oyl	No	No	Halogenation of aldehyde

	Acid anhydride		No	No	Dehydration of two carboxylic acids (removal of H ₂ O)
	Benzene	phenyl	No	No	Occurs naturally
	Amine	-amine	Yes	Yes	Based on ammonia, occurs naturally
	Amide	-amide	Yes	Yes	Carboxylic acid + amine (removal of H ₂ O)