

## 3.1: Functional Groups

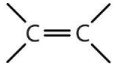
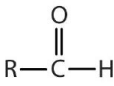
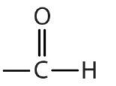
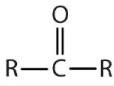
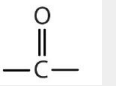
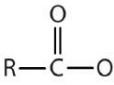
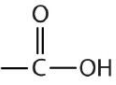
### Learning Objectives

- to describe functional groups and explain why they are useful in the study of organic chemistry.

Previously, we considered several kinds of hydrocarbons. Now we examine some of the many organic compounds that contain functional groups. **Functional groups** are specific structural arrangements of atoms or bonds that are used to classify organic compounds. Many functional groups contain oxygen, nitrogen, and sulfur, which are known as **heteroatoms**. These groups influence the physical properties of a compound and are responsible for the reactivity of families of organic compounds. If you understand the behavior of a particular functional group, you will know a great deal about the general properties of that class of compounds. In this chapter, we make a brief yet systematic study of some of the common organic compound families. Additional families will be covered in the next chapter.

Some common organic families and their functional groups are listed in Table 3.1.1.

Table 3.1.1: Selected Organic Functional Groups

Name of Family	General Formula	Functional Group	Suffix*
alkane	RH	none	-ane
alkene	$R_2C=CR_2$		-ene
alkyne	$RC\equiv CR$	$-C\equiv C-$	-yne
alcohol	ROH	$-OH$	-ol
thiol	RSH	$-SH$	-thiol
ether	ROR	$-O-$	ether
aldehyde			-al
ketone			-one
carboxylic acid			-oic acid

\*Ethers do not have a suffix in their common name; all ethers end with the word *ether*.

### Summary

The functional group, a structural arrangement of atoms and/or bonds, is largely responsible for the properties of organic compound families.

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