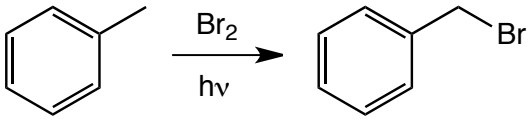


Oxidation and Reduction Reactions
Learning Objectives

As we study this chapter, you should...

1) Be able to recognize an oxidation reaction in organic chemistry. The classic definition of **o**xidation is l**o**ss of an electron (this is the definition you learned in general chemistry). In organic chemistry, there are two additional ways to recognize that an **oxidation** has taken place:

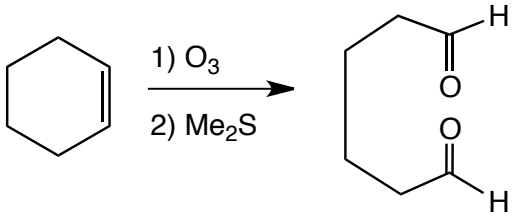
A decrease in the number of C–H bonds...



the compound has lost a C–H bond

An increase in the number of C–Z bonds...

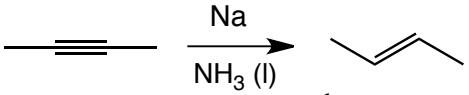
(where Z = O, N, or X)



the compound has gained "four" total bonds to oxygen (two σ and two π bonds)

The classic definition of reduction is gain of an electron (this is the definition you learned in general chemistry). In organic chemistry, there are also two additional ways to recognize that a **reduction** has taken place:

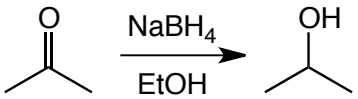
An increase in the number of C–H bonds...



the compound has gained two C–H bonds

A decrease in the number of C–Z bonds...

(where Z = O, N, or X)



the compound has lost a C–O π bond