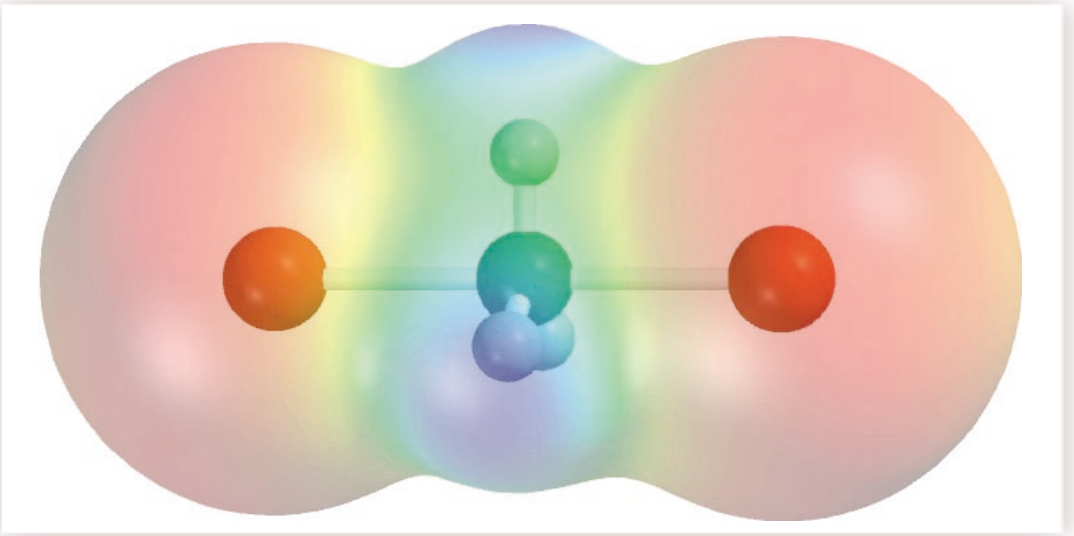
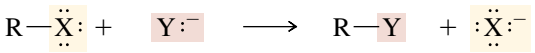


CHAPTER OUTLINE

CHAPTER 8

NUCLEOPHILIC SUBSTITUTION

When we discussed elimination reactions in Chapter 4, we learned that a Lewis base can react with an alkyl halide to form an alkene. In the present chapter, you will find that the same kinds of reactants can also undergo a different reaction, one in which the Lewis base acts as a **nucleophile** to substitute for the halide substituent on carbon.

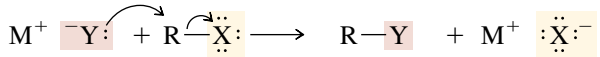


Alkyl halide | Lewis base | Product of nucleophilic substitution | Halide anion

We first encountered nucleophilic substitution in Chapter 3, in the reaction of alcohols with hydrogen halides to form alkyl halides. Now we'll see how alkyl halides can themselves be converted to other classes of organic compounds by nucleophilic substitution.

8.1 FUNCTIONAL GROUP TRANSFORMATION BY NUCLEOPHILIC SUBSTITUTION

Nucleophilic substitution reactions of alkyl halides are related to elimination reactions in that the halogen acts as a **leaving group** on carbon and is lost as an anion. Table 8.1 illustrates several examples of functional group transformations. Each of the nucleophiles is typically used as a sodium or potassium salt.



Nucleophilic reagent | Alkyl halide | Product of nucleophilic substitution | Metal halide