18.4: Microscopic View of Chemical Reactions

Now that we know something about how reaction rates are defined, measured, and related to the concentrations of substances which participate in a reaction, we would like to be able to interpret these macroscopic observations in terms of some microscopic model. On the microscopic level, a chemical reaction involves transformation of reactant atoms, ions, and/or molecules into product atoms, ions, and/or molecules. This requires that some bonds be broken, other bonds be formed, and some nuclei be moved to new locations. There are a limited number of categories into which such microscopic transformations can be classified, and each of these can be related to a macroscopic rate law. Therefore studies of reaction rates provide some insight into what the atoms and molecules of reactants and products are doing as a reaction occurs.