

## Chapter 2 The Components of Matter

The material in this chapter is foundational material that is vital for success on the AP Exam. Such concepts include the definitions and distinctions between atoms, elements, compounds, and mixtures, and choosing proper techniques for separating mixtures and substances from methods such as distillation, filtration, titration, electrolysis, and evaporation.

Knowledge of the historical perspectives of the atom and the development of atomic theory are also part of the AP curriculum in this chapter. People and their accompanying experiments important to note include J.J. Thompson, Ernest Rutherford, Robert Millikan, and John Dalton. Along with knowing the historical perspective, knowing the location, charge, and mass of the atomic particles: proton, neutron, and electron is important. A significant mathematical calculation in this chapter involves knowing how the atomic masses on the periodic table are found and being able to calculate this from a knowledge of the isotopes and their percentages of abundance. Background for further chapters covered includes the location of major groupings of elements based on their properties, such as the metals, nonmetals, and metalloids, on the periodic table.

Complete comfort and familiarity with nomenclature and formula writing is essential to success in an AP Chemistry course. This includes some simple organic chemistry which is covered in this chapter along with naming and formula writing of acids, ionic compounds (including when a Roman numeral should be or not be used), and molecules. To name ionic compounds, it is necessary to know the names of common cations and anions. For molecular compounds it is important to know the names of those elements that form diatomic molecules—those ending in *-gen* ( $\text{H}_2$ ,  $\text{N}_2$ , and  $\text{O}_2$ ) and those ending in *-ine* ( $\text{F}_2$ ,  $\text{Cl}_2$ ,  $\text{Br}_2$ , and  $\text{I}_2$ ).