

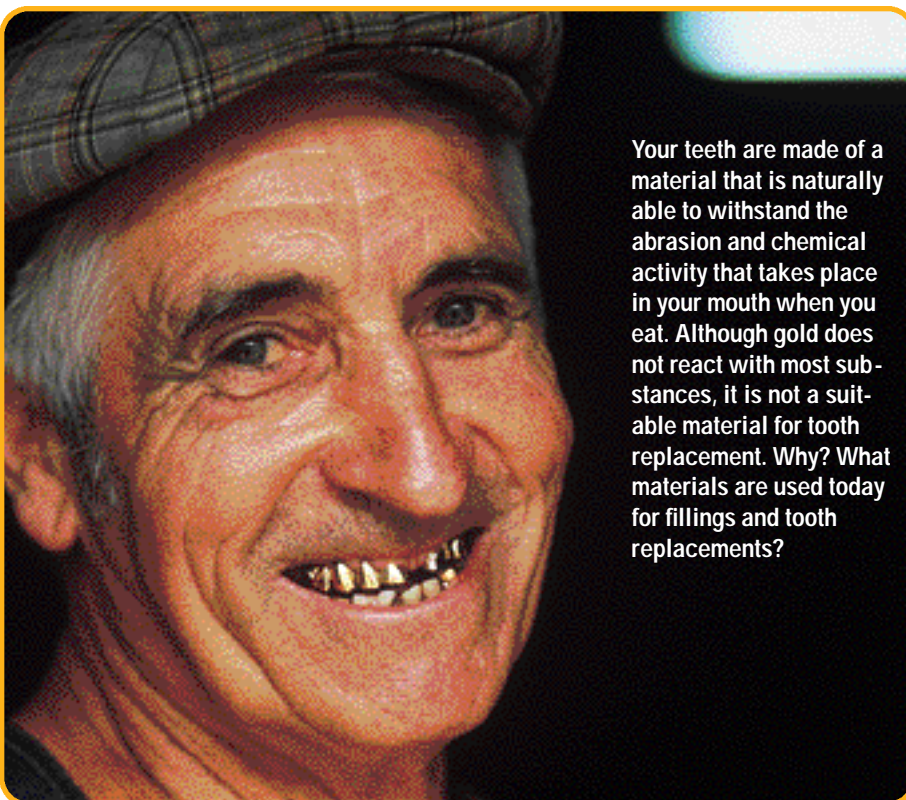
# Chemical Compounds and Bonding

The year was 1896. A chance discovery sent a message echoing from Yukon's Far North to the southern reaches of the United States: "Gold!" People migrated in great numbers to the Yukon Territory, hoping to make their fortunes. Within two years, these migrants transformed a small fishing village into bustling Dawson City—one of Canada's largest cities at the time. They also launched the country's first metal-mining industry.

Gold, like all metals, is shiny, malleable, ductile, and a good conductor of electricity and heat. Unlike most metals and other elements, however, gold is found in nature in its pure form, as an element. Most elements are chemically combined in the form of compounds. Why is this so? Why do atoms of some elements join together as compounds, while others do not? In this chapter, you will use the periodic trends you examined in Chapter 2 to help you answer these questions. You will learn about the bonds that hold elements together in compounds. At the same time, you will learn how to write chemical formulas and how to name compounds.

## Chapter Preview

- 3.1 Classifying Chemical Compounds
- 3.2 Ionic and Covalent Bonding: The Octet Rule
- 3.3 Polar Covalent Bonds and Polar Molecules
- 3.4 Writing Chemical Formulas and Naming Chemical Compounds



Your teeth are made of a material that is naturally able to withstand the abrasion and chemical activity that takes place in your mouth when you eat. Although gold does not react with most substances, it is not a suitable material for tooth replacement. Why? What materials are used today for fillings and tooth replacements?

## Concepts and Skills You Will Need

Before you begin this chapter, review the following concepts and skills:

- drawing Lewis structures to represent valence electrons in the outer energy levels of atoms (Chapter 2, section 2.1)
- identifying and explaining periodic trends (Chapter 2, section 2.2)
- identifying elements by name and by symbol (Chapter 2, section 2.2)