

## GLOSSARY

### B

**bond energy** the energy required to break a chemical bond and form neutral isolated atoms (167)

**bond length** the distance between two bonded atoms at their minimum potential energy, that is, the average distance between two bonded atoms (167)

### C

**chemical bond** a mutual electrical attraction between the nuclei and valence electrons of different atoms that binds the atoms together (161)

**chemical formula** a formula that indicates the relative numbers of atoms of each kind in a chemical compound by using atomic symbols and numerical subscripts (164)

**covalent bonding** a chemical bond resulting from the sharing of an electron pair between two atoms (161)

### D

**diatomic molecule** a molecule containing only two atoms (164)

**dipole** equal but opposite charges that are separated by a short distance (190)

**dipole-dipole force** a force of attraction between polar molecules (190)

**double bond** a covalent bond produced by the sharing of two pairs of electrons between two atoms (172)

**ductility** the ability of a substance to be drawn, pulled, or extruded through a small opening to produce a wire (182)

### E

**electron-dot notation** an electron-configuration notation in which only the valence electrons of an atom of a particular element are shown, indicated by dots placed around the element's symbol (170)

### F

**formula unit** the simplest collection of atoms from which an ionic compound's formula can be established (176)

**GLOSSARY****H**

**hybrid orbitals** orbitals of equal energy produced by the combination of two or more orbitals on the same atom (188)

**hybridization** the mixing of two or more atomic orbitals of similar energies on the same atom to produce new orbitals of equal energies (187)

**hydrogen bonding** the intermolecular force in which a hydrogen atom that is bonded to a highly electronegative atom is attracted to an unshared pair of electrons of an electronegative atom in a nearby molecule (192)

**I**

**intermolecular force** the force of attraction between molecules (189)

**ionic bonding** the chemical bond resulting from electrical attraction between large numbers of cations and anions (161)

**ionic compound** a compound composed of positive and negative ions that are combined so that the numbers of positive and negative charges are equal (176)

**L**

**lattice energy** the energy released when one mole of an ionic crystalline compound is formed from gaseous ions (178)

**Lewis structure** a formula in which atomic symbols represent nuclei and inner-shell electrons, dot-pairs or dashes between two atomic symbols represent electron pairs in covalent bonds, and dots adjacent to only one atomic symbol represent unshared electrons (171)

**London dispersion force** an intermolecular attraction resulting from the constant motion of electrons and the creation of instantaneous dipoles (193)

**lone pair** a pair of electrons that is not involved in bonding and that belongs exclusively to one atom (171)

**M**

**malleability** the ability of a substance to be hammered or beaten into thin sheets (182)

**metallic bonding** chemical bonding that results from the attraction between metal atoms and the surrounding sea of electrons (181)

**GLOSSARY**

**molecular compound** a chemical compound whose simplest units are molecules (164)

**molecular formula** a formula showing the types and numbers of atoms combined in a single molecule of a molecular compound (164)

**molecular polarity** the uneven distribution of molecular charge (183)

**molecule** a neutral group of atoms that are held together by covalent bonds (164)

**multiple bond** a double or triple bond (173)

**N**

**nonpolar-covalent bond** a covalent bond in which the bonding electrons are shared equally by the bonded atoms, resulting in a balanced distribution of electrical charge (162)

**O**

**octet rule** chemical compounds tend to form so that each atom, by gaining, losing, or sharing electrons, has an octet of electrons in its highest occupied energy level (169)

**P**

**polar** having an uneven distribution of charge (162)

**polar-covalent bond** a covalent bond in which the bonded atoms have an unequal attraction for the shared electrons (162)

**polyatomic ion** a charged group of covalently bonded atoms (180)

**R**

**resonance** the bonding in molecules or ions that cannot be correctly represented by a single Lewis structure (175)

**S**

**single bond** a covalent bond produced by the sharing of one pair of electrons between two atoms (171)

## GLOSSARY

**structural formula** a formula that indicates the kind, number, arrangement, and bonds but not the unshared electron pairs of the atoms in a molecule (171)

### T

**triple bond** a covalent bond produced by the sharing of three pairs of electrons between two atoms (173)

### U

**unshared pair** a pair of electrons that is not involved in bonding and that belongs exclusively to one atom (171)

### V

**VSEPR theory** repulsion between the sets of valence-level electrons surrounding an atom causes these sets to be oriented as far apart as possible (183)