hydration the strong affinity of water molecules for particles of dissolved or suspended substances that causes electrolytic dissociation (411)

hydrocarbon an organic compound composed only of carbon and hydrogen (712)

hydrogen bond the intermolecular force occurring when a hydrogen atom that is bonded to a highly electronegative atom of one molecule is attracted to two unshared electrons of another molecule (206)

hydrolysis a chemical reaction between water and another substance to form two or more new substances; a reaction between water and a salt to create an acid or a base (608, 752)

hydronium ion an ion consisting of a proton combined with a molecule of water; H_3O^+ (441)

hypothesis an explanation that is based on prior scientific research or observations and that can be tested (30)

I

ideal gas an imaginary gas whose particles are infinitely small and do not interact with each other (329)

ideal gas constant the proportionality constant that appears in the equation of state for 1 mol of an ideal gas; $R = 0.082\ 057\ 84$ L • atm/mol • K (384)

ideal gas law the law that states the mathematical relationship of pressure (P), volume (V), temperature (T), the gas constant (R), and the number of moles of a gas (n); $PV = nRT$ (383)

immiscible describes two or more liquids that do not mix with each other (412)

intensive property a property that does not depend on the amount of matter present, such as pressure, temperature, or density (7)

intermediate a substance that forms in a middle stage of a chemical reaction and is considered a stepping stone between the parent substance and the final product (562)

inverse proportion the relationship between two variables whose product is constant (56)

ion an atom, radical, or molecule that has gained or lost one or more electrons and has a negative or positive charge (153)

ionic bond a force that attracts electrons from one atom to another, which transforms a neutral atom into an ion (175)

ionic compound a compound composed of ions bound together by electrostatic attraction (190)

ionization the process of adding or removing electrons from an atom or molecule, which gives the atom or molecule a net charge (153, 441)

ionization energy the energy required to remove an electron from an atom or ion (abbreviation, IE) (153)

isomer one of two or more compounds that have the same chemical composition but different structures (712)

isotope an atom that has the same number of protons (or the same atomic number) as other atoms of the same element do but that has a different number of neutrons (and thus a different atomic mass) (78)

J

joule the unit used to express energy; equivalent to the amount of work done by a force of 1 N acting through a distance of 1 m in the direction of the force (abbreviation, J) (531)

K

ketone an organic compound in which a carbonyl group is attached to two alkyl groups; obtained by the oxidation of secondary alcohols (733)

kinetic-molecular theory a theory that explains that the behavior of physical systems depends on the combined actions of the molecules constituting the system (329)

L

lanthanide a member of the rare-earth series of elements, whose atomic numbers range from 58 (cerium) to 71 (lutetium) (136)

lattice energy the energy associated with constructing a crystal lattice relative to the energy of all constituent atoms separated by infinite distances (192)

law of conservation of mass the law that states that mass cannot be created or destroyed in ordinary chemical and physical changes (68)

law of definite proportions the law that states that a chemical compound always contains the same elements in exactly the same proportions by weight or mass (68)

law of multiple proportions the law that states that when two elements combine to form two or more compounds, the mass of one element that combines with a given mass of the other is in the ratio of small whole numbers (68)

Lewis acid an atom, ion, or molecule that accepts a pair of electrons (481)

Lewis acid-base reaction the formation of one or more covalent bonds between an electron-pair donor and an electron-pair acceptor (482)

Lewis base an atom, ion, or molecule that donates a pair of electrons (482)

Lewis structure a structural formula in which electrons are represented by dots; dot pairs or dashes between two atomic symbols represent pairs in covalent bonds (185)

limiting reactant the substance that controls the quantity of product that can form in a chemical reaction (312)

line-emission spectrum a diagram or graph that indicates the degree to which a substance emits radiant energy with respect to wavelength (100)

lipid a type of biochemical that does not dissolve in water, including fats and steroids; lipids store energy and make up cell membranes (754)

liquid the state of matter that has a definite volume but not a definite shape (8)