

**double-displacement reaction** a reaction in which a gas, a solid precipitate, or a molecular compound forms from the apparent exchange of atoms or ions between two compounds (282)

**ductility** the ability of a substance to be hammered thin or drawn out into a wire (196)

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## E

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**effervescence** a bubbling of a liquid caused by the rapid escape of a gas rather than by boiling (413)

**effusion** the passage of a gas under pressure through a tiny opening (332)

**elastic collision** a collision between ideally elastic bodies in which the final and initial kinetic energies are the same (329)

**electrochemistry** the branch of chemistry that is the study of the relationship between electric forces and chemical reactions (655)

**electrode** a conductor used to establish electrical contact with a non-metallic part of a circuit, such as an electrolyte (656)

**electrode potential** the difference in potential between an electrode and its solution (662)

**electrolysis** the process in which an electric current is used to produce a chemical reaction, such as the decomposition of water (279, 670)

**electrolyte** a substance that dissolves in water to give a solution that conducts an electric current (405)

**electrolytic cell** an electrochemical device in which electrolysis takes place when an electric current is in the device (667)

**electromagnetic radiation** the radiation associated with an electric and magnetic field; it varies periodically and travels at the speed of light (97)

**electromagnetic spectrum** all of the frequencies or wavelengths of electromagnetic radiation (97)

**electron affinity** the energy needed to remove an electron from a negative ion to form a neutral atom or molecule (157)

**electron capture** the process in which an inner orbital electron is captured by the nucleus of the atom that contains the electron (687)

**electron configuration** the arrangement of electrons in an atom (111)

**electron-dot notation** an electron-configuration notation in which only the valence electrons of an atom of the a particular element are shown, indicated by dots placed around the element's symbol (184)

**electronegativity** a measure of the ability of an atom in a chemical compound to attract electrons (161)

**electroplating** the electrolytic process of plating or coating an object with a metal (668)

**element** a substance that cannot be separated or broken down into simpler substances by chemical means; all atoms of an element have the same atomic number (6)

**elimination reaction** a reaction in which a simple molecule, such as water or ammonia, is removed and a new compound is produced (737)

**empirical formula** a chemical formula that shows the composition of a compound in terms of the relative numbers and kinds of atoms in the simplest ratio (245)

**end point** the point in a titration at which a marked color change takes place (516)

**enthalpy change** the amount of energy released or absorbed as heat by a system during a process at constant pressure (534)

**enthalpy of combustion** the energy released as heat by the complete combustion of a specific amount of a substance at constant pressure or constant volume (539)

**enthalpy of reaction** the amount of energy released or absorbed as heat during a chemical reaction (534)

**enthalpy of solution** the amount of energy released or absorbed as heat when a specific amount of solute dissolves in a solvent (416)

**entropy** a measure of the randomness or disorder of a system (547)

**enzyme** a type of protein that speeds up metabolic reactions in plants and animals without being permanently changed or destroyed (763)

**equilibrium** in chemistry, the state in which a chemical reaction and the reverse chemical reaction occur at the same rate such that the concentrations of reactants and products do not change (342)

**equilibrium constant** a number that relates the concentrations of starting materials and products of a reversible chemical reaction to one another at a given temperature (592)

**equilibrium vapor pressure** the vapor pressure of a system at equilibrium (343)

**equivalence point** the point at which the two solutions used in a titration are present in chemically equivalent amounts (516)

**ester** an organic compound formed by combining an organic acid with an alcohol such that water is eliminated (734)

**ether** an organic compound in which two carbon atoms bond to the same oxygen atom (732)

**evaporation** the change of a substance from a liquid to a gas (335)

**excess reactant** the substance that is not used up completely in a reaction (312)

**excited state** a state in which an atom has more energy than it does at its ground state (100)

**extensive property** a property that depends on the extent or size of a system (7)

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## F

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**family** a vertical column of the periodic table (17)

**fatty acid** an organic acid that is contained in lipids, such as fats or oils (754)

**film badge** a device that measures the approximate amount of radiation received in a given period of time by people who work with radiation (694)