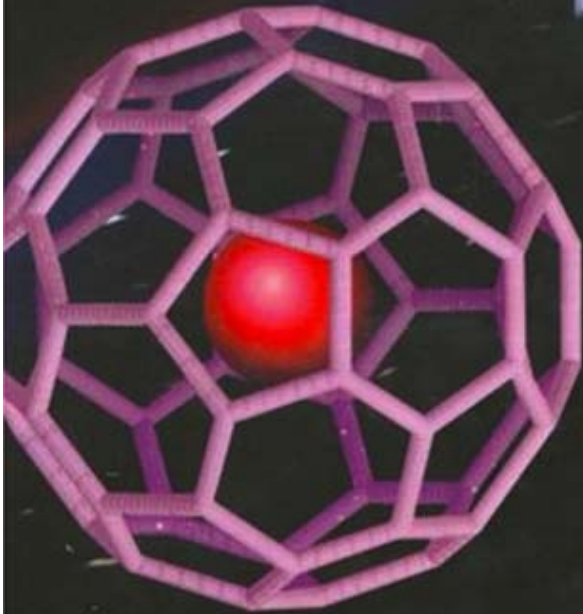


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McGraw-Hill
Dictionary of

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TERMS



Sixth Edition

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On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)

Over the six editions of the Dictionary, material has been drawn from the following references: G. M. Garrity et al., *Taxonomic Outline of the Prokaryotes*, Release 2, Springer-Verlag, January 2002; D. W. Linzey, *Vertebrate Biology*, McGraw-Hill, 2001; J. A. Pechenik, *Biology of the Invertebrates*, 4th ed., McGraw-Hill, 2000; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, Department of Defense, 1967; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, National Aeronautics and Space Administration, 1965; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *ADP Glossary*, Department of the Navy, NAVSO P-3097; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology, White Sands Missile Range, New Mexico*, National Bureau of Standards, AD 467-424; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission.

**McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS,
Sixth Edition**

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known as transmission mode. [PETR] The mineral composition of a rock, usually expressed as percentages of total weight or volume. [PHYS] A state of an oscillating system that corresponds to a particular field pattern and one of the possible resonant frequencies of the system. [STAT] The most frequently occurring member of a set of numbers. { 'mɒd }

mode converter See mode transducer. { 'mɒd kən,vɔːdər }

mode eddies [OCEANOGR] Densely packed, irregularly oval high- and low-pressure centers roughly 240 miles (400 kilometers) in diameter in which current intensities are typically tenfold greater than the local means. Also known as mesoscale eddies. { 'mɒd ,ed-ēz }

mode filter [ELECTROMAG] A waveguide filter designed to separate waves of the same frequency but of different transmission modes. { 'mɒd ,fil-tər }

mode jump [ELECTR] Change in mode of magnetron operation from one pulse to the next; each mode represents a different frequency and power level. { 'mɒd ʃəmp }

model [COMPUT SCI] See macroskeleton. [SCI TECH] A mathematical or physical system, obeying certain specified conditions, whose behavior is used to understand a physical, biological, or social system to which it is analogous in some way. { 'mɒd-əl }

model atmosphere [METEOROL] Any theoretical representation of the atmosphere, particularly of vertical temperature distribution. { 'mɒd-əl 'at-mə,sfɪr }

model-based expert system [COMPUT SCI] An expert system that is based on knowledge of the structure and function of the object for which the system is designed. { 'mɒd-əl ,bæst 'ek-spərt ,sis-təm }

model basin [ENG] A large basin or tank of water where scale models of ships can be tested. Also known as model tank; towing tank. { 'mɒd-əl 'bæs-ən }

model-following problem [CONT SYS] The problem of determining a control that causes the response of a given system to be as close as possible to the response of a model system, given the same input. { 'mɒd-əl ʃfɔːl-ə-wɪŋ ,prɒb-ləm }

mode-locked laser [OPTICS] A laser designed so that several modes of oscillation with closely spaced wavelengths, in which the laser would normally oscillate, are synchronized so that a pulse of light, lasting for as little as a picosecond, is generated. { 'mɒd ,ləkt 'læ-zər }

model reduction [CONT SYS] The process of discarding certain modes of motion while retaining others in the model used by an active control system, in order that the control system can compute control commands with sufficient rapidity. { 'mɒd-əl rɪ'dʌk-shən }

model reference system [CONT SYS] An ideal system whose response is agreed to be optimum; computer simulation in which both the model system and the actual system are subjected to the same stimulus is carried out, and parameters of the actual system are adjusted to minimize the difference in the outputs of the model and the actual system. { 'mɒd-əl 'ref-rəns ,sis-təm }

model symbol [COMPUT SCI] The standard usage of geometrical figures, such as squares, circles, or triangles, to help illustrate the various working parts of a model: each symbol must, nevertheless, be footnoted for complete clarification. { 'mɒd-əl ,sɪm-bəl }

model tank See model basin. { 'mɒd-əl ,tæŋk }

model theory [MATH] The general qualitative study of the structure of a mathematical theory. { 'mɒd-əl ,θɪ-ə-rē }

modem [ELECTR] A combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the line, and vice versa. Also known as dataset. Derived from modulator-demodulator. { 'mɒ,dem }

modem eliminator [COMPUT SCI] A device that is used to connect two computers in proximity and that mimics the action of two modems and a telephone line. { 'mɒ,dem ə'lim-ə,næd-ər }

mode number [ELECTR] 1. The number of complete cycles during which an electron of average speed is in the drift space of a reflex klystron. 2. The number of radians of phase in the microwave field of a magnetron divided by 2π as one goes once around the anode. { 'mɒd ,nəm-bər }

mode of oscillation See mode of vibration. { 'mɒd əv ,ɔs-ə'lə-shən }

mode of vibration [MECH] A characteristic manner in which

a system which does not dissipate energy and whose motions are restricted by boundary conditions can oscillate, having a characteristic pattern of motion and one of a discrete set of frequencies. Also known as mode of oscillation. { 'mɒd əv vɪ'brə-shən }

moder [GEOL] Humus consisting of plant material that is undergoing alteration from the living to the decayed state and is intermediate in acidity between mor and mull. { 'mɒd-ər }

moderate breeze [METEOROL] In the Beaufort wind scale, a wind whose speed is from 11 to 16 knots (13 to 18 miles per hour or 20 to 30 kilometers per hour). { 'mɒd-ə-rət 'brɛz }

moderate gale [METEOROL] In the Beaufort wind scale, a wind whose speed is from 28 to 33 knots (32 to 38 miles per hour or 52 to 61 kilometers per hour). { 'mɒd-ə-rət 'gæl }

moderator [NUCLEO] The material used in a nuclear reactor to moderate or slow down neutrons from the high velocities at which they are created in the fission process. { 'mɒd-ə ,ræd-ər }

modern algebra [MATH] The study of algebraic systems such as groups, rings, modules, and fields. { 'mɒd-ər-n 'al-jə-brə }

modern control [CONT SYS] A control system that takes account of the dynamics of the processes involved and the limitations on measuring them, with the aim of approaching the condition of optimal control. { 'mɒd-ər-n kən'trɒl }

Mode S [NAV] An augmentation of the Air Traffic Control Radar Beacon System in which each aircraft is equipped with a transponder that replies when interrogated with a discrete identity code. Also known as ADSEL (in Britain); discrete address beacon system or DABS (in the United States). { 'mɒd 'es }

mode shift [ELECTR] Change in mode of magnetron operation during a pulse. { 'mɒd ,ʃɪft }

mode skip [ELECTR] Failure of a magnetron to fire on each successive pulse. { 'mɒd ,skɪp }

mode switch [COMPUT SCI] A preset control which affects the normal response of various components of a mechanical desk calculator. [ELECTR] A microwave control device, often consisting of a waveguide section of special cross section, which is used to change the mode of microwave power transmission in the waveguide. { 'mɒd ,swɪtʃ }

mode transducer [ELECTR] Device for transforming an electromagnetic wave from one mode of propagation to another. Also known as mode converter; mode transformer. { 'mɒd tranz,dü-sər }

mode transformer See mode transducer. { 'mɒd tranz,fɔːm-ər }

MODFET See high-electron-mobility transistor. { 'mɒd,fet }

modification [CELL MOL] In nucleic acid metabolism, any changes made to deoxyribonucleic acid or ribonucleic acid after their original incorporation into a polynucleotide chain. [ENG] A major or minor change in the design of an item, effected in order to correct a deficiency, to facilitate production, or to improve operational effectiveness. [MET] Treatment of molten aluminum alloys containing 8-13% silicon with small amounts of a sodium fluoride or sodium chloride mixture; improves mechanical properties. [SCI TECH] Any change brought about by external or internal factors. { ,mɒd-ə-fə'kæ-shən }

modification kit [ENG] A collection of items not all having the same basic name which are employed individually or conjunctively to alter the design of a component or equipment. { ,mɒd-ə-fə'kæ-shən ,kit }

modified asphalt [MATER] Asphalt modified by addition of a rosin ester or synthetic resin. { 'mɒd-ə,fɪd 'as,fɒlt }

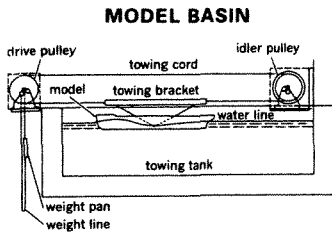
modified base [CELL MOL] A nucleotide that is an altered form of the usual four nucleic acid bases. { 'mɒd-ə,fɪd 'bæs }

modified Bessel equation [MATH] The differential equation $z^2 f''(z) + z f'(z) - (z^2 + n^2) f(z) = 0$, where z is a variable that can have real or complex values and n is a real or complex number. { 'mɒd-ə,fɪd 'bes-əl i,kwæ-zhən }

modified Bessel function of the first kind See modified Bessel function. { 'mɒd-ə,fɪd 'bes-əl ,fəŋk-shən əv ðə 'fɔːst ,kɪnd }

modified Bessel function of the second kind See modified Hankel function. { 'mɒd-ə,fɪd 'bes-əl ,fəŋk-shən əv ðə 'sek-ənd ,kɪnd }

modified Bessel functions [MATH] The functions defined by $I_\nu(x) = \exp(-i\nu\pi/2) J_\nu(ix)$, where J_ν is the Bessel function of order ν and x is real and positive. Also known as modified



Model basin with model towed by falling weight.

frequency and power level. { 'mōd ,jəmp }

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