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Fifth Edition

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On the cover: Photomicrograph of crystals of vitamin B₁₂.
(Dennis Kunkel, University of Hawaii)

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**McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS,
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some characteristics of a carrier. { 'mäj-ə,läd-ij 'sig-

ion [COMMUN] The process or the result of the pro- which some parameter of one wave is varied in accor- with some parameter of another wave. [MECH ENG] on of the fuel-air mixture to a burner in response to ons of load on a boiler. { ,mäj-ə'lä-shən }

ion capability [ELECTR] Of an aural transmitter, the m percentage modulation that can be obtained without ig a given distortion figure. { ,mäj-ə'lä-shən ,kä-pä-

ion code [COMMUN] A code used to cause variations al in accordance with a predetermined scheme; normally ter or modulate a carrier wave to transmit data. { ,mäj- ,köd }

ion crest [COMMUN] The peak amplitude of an am- modulated wave. { ,mäj-ə'lä-shən 'krest }

ion-doped field-effect transistor See high-electron transistor. { ,mäj-ə'lä-shən ,döpt 'fēld i,fekt tran'zist-

ion-doped structure [SOLID STATE] An epitaxially ystal structure in which successive semiconductor lay- in different types of electrical dopants. { ,mäj-ə'lä- pt 'strækchər }

ion envelope [COMMUN] A curve drawn through the a graph showing the waveform of a modulated signal; ts the waveform of the intelligence carried by the signal. lä-shən 'en-və,löp }

ion factor [COMMUN] 1. In general, the ratio of the ation in the modulation actually used in a transmitter aximum variation for which the transmitter was de- 2. In an amplitude-modulated wave, the ratio (usually d in percent) of the peak variation of the envelope from nce value, to the reference value. Also known as index lation. 3. In a frequency-modulated wave, the ratio of il frequency swing to the frequency swing required for odulation. { ,mäj-ə'lä-shən ,fak'tər }

ion index [COMMUN] The ratio of the frequency de- o the frequency of the modulating wave in a frequency- ion system when using a sinusoidal modulating wave. own as ratio deviation. { ,mäj-ə'lä-shən ,in,deks }

ion meter [ENG] Instrument for measuring the de- modulation (modulation factor) of a modulated wave ally expressed in percent. { ,mäj-ə'lä-shən ,mēd-ər }

ion rise [ELECTR] Increase of the modulation per- caused by nonlinearity of any tuned amplifier, usually ntermediate-frequency stage of a receiver. { ,mäj-ə'lä- : }

ion spectroscopy [SPECT] A branch of spectros- ncemed with the measurement and interpretation of n transmission or reflection spectra induced (usually) ally applied perturbation, such as temperature or pres- nge, or an electric or magnetic field. { ,mäj-ə'lä-shən skəpē }

ion transformer [ENG ACOUS] An audio-frequency ner which matches impedances and transmits audio fre- s between one or more plates of an audio output stage rd or plate of a modulated amplifier. { ,mäj-ə'lä-shən rnr }

ion with a fixed reference [COMMUN] Phase mod- with a pilot carrier. { ,mäj-ə'lä-shən with ə 'fikt 'ref-

or [ELECTR] 1. The transmitter stage that supplies ulating signal to the modulated amplifier stage or that the modulated amplifier stage to produce pulses at de- tants as in radar. 2. A device that produces modulation eans, such as by virtue of a nonlinear characteristic or rolling some circuit quantity in accordance with the m of a modulating signal. 3. One of the electrodes of tor. { 'mäj-ə,läd-ər }

tor crystal [OPTICS] Crystal which is used to modu- larized light beam by the use of the Pockel's effect; s a modulator in laser systems. { 'mäj-ə,läd-ər ,krist-

tor-demodulator See modem. { 'mäj-ə,läd-ər dē'mäj-

tor glow tube [ELECTR] Cold cathode recorder tube

a modulated high-intensity point source of light. { 'mäj-ə,läd- ər 'glō ,tüb }

module [AERO ENG] A self-contained unit which serves as a building block for the overall structure in space technology; usually designated by its primary function, such as command module or lunar landing module. [COMPUT SCI] 1. A distinct and identifiable unit of computer program for such purposes as compiling, loading, and linkage editing. 2. One memory bank and associated electronics in a computer. [ELECTR] A pack- aged assembly of wired components, built in a standardized size and having standardized plug-in or solderable terminations. [ENG] A unit of size used as a basic component for standard- izing the design and construction of buildings, building parts, and furniture. [MATH] A vector space in which the scalars are a ring rather than a field. { 'mäj-ül }

modulo [MATH] 1. A group G modulo a subgroup H is the quotient group G/H of cosets of H in G . 2. A technique of identifying elements in an algebraic structure in such a manner that the resulting collection of identified objects is the same type of structure. { 'mäj-ə,lō }

modulo N [MATH] Two integers are said to be congruent modulo N (where N is some integer) if they have the same remainder when divided by N . { 'mäj-ə,lō 'en }

modulo N arithmetic [MATH] Calculations in which all in- tegers are replaced by their remainders after division by N (where N is some fixed integer.) { 'mäj-ə,lō 'en ə'rith-mə'tik }

modulo N check [COMPUT SCI] A procedure for verification of the accuracy of a computation by repeating the steps in mod- ulo N arithmetic and comparing the result with the original result (modulo N). Also known as residue check. { 'mäj-ə,lō 'en 'chek }

modulo-two adder [COMPUT SCI] A logical circuit for adding one-digit binary numbers. { 'mäj-ə,lō 'tü 'ad-ər }

modulus [MATH] 1. The modulus of a logarithm with a given base is the factor by which a logarithm with a second base must be multiplied to give the first logarithm. 2. See absolute value. { 'mäj-ə-ləs }

modulus of a congruence [MATH] A number a , such that two specified numbers b and c give the same remainder when divided by a ; b and c are then said to be congruent, modulus a (or congruent, modulo a). { 'mäj-ə-ləs əv ə kən'grü-əns }

modulus of compression See bulk modulus of elasticity. { 'mäj-ə-ləs əv kəm'presh-ən }

modulus of continuity [MATH] For a real valued continuous function f , this is the function whose value at a real number r is the maximum of the modulus of $f(x) - f(y)$ where the modulus of $x - y$ is less than r ; this function is useful in approximation theory. { 'mäj-ə-ləs əv ,künt-ən'ü-əd-ē }

modulus of decay [MECH] The time required for the ampli- tude of oscillation of an underdamped harmonic oscillator to drop to $1/e$ of its initial value; the reciprocal of the damping factor. { 'mäj-ə-ləs əv di'kā }

modulus of deformation [MECH] The modulus of elasticity of a material that deforms other than according to Hooke's law. { 'mäj-ə-ləs əv ,dē,för'mä-shən }

modulus of distance [ASTRON] The quantity $m - M$, where M is the absolute magnitude of a given star and m is its apparent magnitude. Also known as distance modulus. { 'mäj-ə-ləs əv 'dis-təns }

modulus of elasticity [MECH] The ratio of the increment of some specified form of stress to the increment of some specified form of strain, such as Young's modulus, the bulk modulus, or the shear modulus. Also known as coefficient of elasticity; elasticity modulus; elastic modulus. { 'mäj-ə-ləs əv i,las'tis- əd-ē }

modulus of elasticity in shear [MECH] A measure of a mat- erial's resistance to shearing stress, equal to the shearing stress divided by the resultant angle of deformation expressed in ra- dians. Also known as coefficient of rigidity; modulus of rigid- ity; rigidity modulus; shear modulus. { 'mäj-ə-ləs əv i,las'tis- əd-ē in 'shir }

modulus of resilience [MECH] The maximum mechanical energy stored per unit volume of material when it is stressed to its elastic limit. { 'mäj-ə-ləs əv ri'zil-yəns }

modulus of rigidity See modulus of elasticity in shear. { 'mäj- ə-ləs əv ri'jid-əd-ē }

modulus of rupture in bending [MECH] The maximum stress per unit area that a specimen can withstand without break-