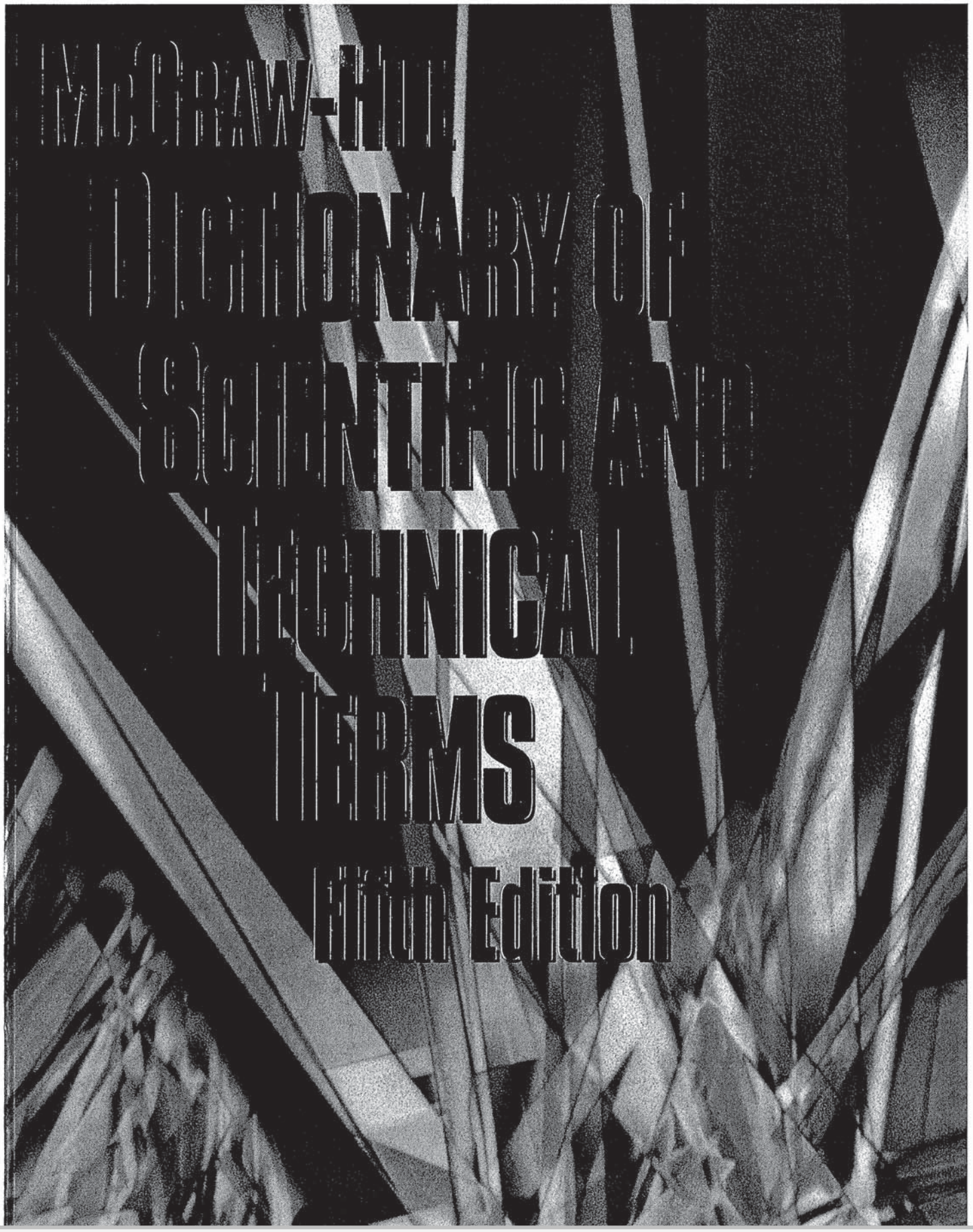

McGraw-Hill Dictionary of Scientific and Technical Terms

Fifth Edition

Sybil P. Parker
Editor in Chief

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On the cover: Photomicrograph of crystals of vitamin B_1.
(*Dennis Kunkel, University of Hawaii*)

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an ordinary nucleus. Designated Σ^- hyperonic atom. { 'sig·mə 'mī·nəs ¦hī·pə¦rän·ik 'ad·əm }

sigma phase [MET] A brittle, nonmagnetic phase of tetragonal structure occurring in many transition-metal alloys; frequently encountered in high chromium stainless steels. { 'sig·mə ˌfāz }

sigma pile [NUCLEO] An assembly of moderating material containing a neutron source, used to study the absorption cross sections and other neutron properties of the material. { 'sig·mə ˌpīl }

sigma ring [MATH] A ring of sets where any countable union of its members is also a member. { 'sig·mə ˌriŋ }

sigmaspire [INV ZOO] An S-shaped sponge spicule. { 'sig·məˌspīr }

sigma-T [OCEANOGR] An abbreviated value of the density of a sea-water sample of temperature T and salinity S: $\sigma T = [\rho(S,T) - 1] \times 10^3$, where $\rho(S,T)$ is the value of the sea-water density in centimeter-gram-second units at standard atmospheric pressure. { 'sig·mə ¦tē }

sigmatron [NUCLEO] A cyclotron and betatron operating in tandem to produce billion-volt x-rays. { 'sig·məˌträn }

sigmatropic shift [ORG CHEM] A rearrangement reaction that consists of the migration of a sigma bond (that is, the sigma electrons) and the group of atoms that are attached to it from one position in a chain or ring into a new position. { ¦sig·mə¦träp·ik 'shift }

sigmoid [BIOL] S-shaped. { 'sigˌmȯid }

sigmoidal dune [GEOL] A dune with an S-shaped ridge crest formed by the merger of crescentic dunes. { sigˈmȯid·əl 'dün }

sigmoidal fold [GEOL] A recumbent fold having an axial surface which resembles the Greek letter sigma. { sigˈmȯid·əl 'fōld }

sigmoid colon [ANAT] The S-shaped portion of the colon between the descending colon and the rectum. { 'sigˌmȯid 'kō·lən }

sigmoid distortion [OPTICS] A distortion present in line-scan imagery, causing straight lines cut obliquely to appear as sigmoid curves. { 'sigˌmȯid di'stȯr·shən }

sigmoiditis [MED] Inflammation of the sigmoid flexure of the colon. { ˌsig·mȯi'dīd·əs }

sigmoidoscope [MED] An appliance for the inspection, by artificial light, of the sigmoid colon; it differs from the proctoscope in its greater length and diameter. { sigˈmȯid·əˌskōp }

sign [COMMUN] In semiotics, an entity that signifies some other thing, and may be interpreted. [MATH] **1.** A symbol which indicates whether a quantity is greater than zero or less than zero; the signs are often the marks + and − respectively, but other arbitrarily selected symbols are used, especially in automatic data processing. **2.** A unit of plane angle, equal to 30° or π/6 radians. { sīn }

signage [GRAPHICS] Environmental graphic communications whose functions include direction, identification, information or orientation, regulation, warning, or restriction. { 'sīn·ij }

signal [COMMUN] **1.** A visual, aural, or other indication used to convey information. **2.** The intelligence, message, or effect to be conveyed over a communication system. **3.** *See* signal wave. { 'sig·nəl }

signal area [NAV] That part of an airport used for the display of visual ground signals for the benefit of aircraft in flight. { 'sig·nəl ˌer·ē·ə }

signal bias [COMMUN] Form of teletypewriter signal distortion brought about by the lengthening or shortening of pulses during transmission; when marking pulses are all lengthened, a marking signal bias results; when marking pulses are all shortened, a spacing signal bias results. { 'sig·nəl ˌbī·əs }

signal carrier *See* carrier. { 'sig·nəl ˌkar·ē·ər }

signal center [COMMUN] A combination of signal communication facilities operated by the U.S. Army in the field and consisting of a communications center, telephone switching central, and appropriate means of signal communications. { 'sig·nəl ˌsen·tər }

signal channel [COMMUN] A signal path for transmitting electric signals; such paths may be separated by frequency division or time division. { 'sig·nəl ˌchan·əl }

signal conditioning [COMMUN] Processing the form or mode of a signal so as to make it intelligible to or compatible with a given device, such as a data transmission line, including such manipulation as pulse shaping, pulse clipping, digitizing, and linearizing. { 'sig·nəl kənˌdish·ən·iŋ }

signal correction [ENG] In seismic analysis, a correction to eliminate the time differences between reflection times, resulting from changes in the outgoing signal from shot to shot. { 'sig·nəl kəˌrek·shən }

signal detection theory [PSYCH] A theory which characterizes not only the acuity of an individual's discrimination but also the psychological factors that bias his judgment. { 'sig·nəl di'tek·shən ˌthē·ə·rē }

signal distance [COMPUT SCI] The number of bits that are not the same in two binary words of equal length. Also known as hamming distance. { 'sig·nəl ˌdis·təns }

signal distortion generator [ELECTR] Instrument designed to apply known amounts of distortion on a signal for the purpose of testing and adjusting communications equipment such as teletypewriters. { 'sig·nəl di'stȯr·shən ˌjen·əˌrād·ər }

signal effect [ENG] In seismology, variation in arrival times of reflections recorded with identical filter settings, as a result of changes in the outgoing signal. { 'sig·nəl iˌfekt }

signal flare [ENG] A pyrotechnic flare of distinct color and character used as a signal. { 'sig·nəl ˌfler }

signal-flow graph [SYS ENG] An abbreviated block diagram in which small circles, called nodes, represent variables of the system, and the nodes are connected by lines, called branches, which represent one-way signal multipliers; an arrow on the line indicates direction of signal flow, and a letter near the arrow indicates the multiplication factor. Also known as flow graph. { 'sig·nəl ¦flō 'graf }

signal generator [ENG] An electronic test instrument that delivers a sinusoidal output at an accurately calibrated frequency that may be anywhere from the audio to the microwave range; the frequency and amplitude are adjustable over a wide range, and the output usually may be amplitude- or frequency-modulated. Also known as test oscillator. { 'sig·nəl ˌjen·əˌrād·ər }

signal in band [COMMUN] To send control signals at frequencies within the frequency range of the data signal. { ¦sig·nəl in ¦band }

signaling cell [PHYSIO] A cell whose products induce a specific response in target cells. { 'sig·nə·liŋ ˌsel }

signaling key *See* key. { 'sig·nə·liŋ ˌkē }

signaling rate [COMMUN] The rate at which signals are transmitted. { 'sig·nə·liŋ ˌrāt }

signal intensity [COMMUN] The electric-field strength of the electromagnetic wave transmitting a signal. { 'sig·nəl inˌten·səd·ē }

signal level [COMMUN] The difference between the level of a signal at a point in a transmission system and the level of an arbitrarily specified reference signal. { 'sig·nəl ˌlev·əl }

signal light [COMMUN] A light specifically designed for the transmission of code messages by means of visible light rays that are interrupted or deflected by electric or mechanical means. [ENG] A signal, illumination, or any pyrotechnic light used as a sign. { 'sig·nəl ˌlīt }

signal molecule [BIOCHEM] A molecule produced by a signaling cell. { 'sig·nəl ˌmäl·əˌkyül }

signal normalization *See* signal standardization. { 'sig·nəl ˌnȯr·mə·lə'zā·shən }

signal out of band [COMMUN] To send control signals at frequencies outside the frequency range of the data signal. { ¦sig·nəl au̇t əv ¦band }

signal processing [COMMUN] The extraction of information from complex signals in the presence of noise, generally by conversion of the signals into digital form followed by analysis using various algorithms. { 'sig·nəl ˌprä,ses·iŋ }

signal regeneration [COMMUN] The restoration of a waveform representing a signal to its original amplitude and shape. Also known as signal reshaping. { 'sig·nəl rē¸jen·ə'rā·shən }

signal reporting code *See* radio-signal reporting code. { 'sig·nəl ri'pȯrd·iŋ ˌkōd }

signal reshaping *See* signal regeneration. { 'sig·nəl rē¸shāp·iŋ }

signal rocket [ORD] A rocket that gives off some characteristic color or display which has a meaning according to an established code. { 'sig·nəl ˌräk·ət }

signal-shaping network [ELECTR] Network inserted in a telegraph circuit, usually at the receiving end, to improve the waveform of the code signals. { 'sig·nəl ¦shāp·iŋ ˌnet¸wərk }

signal speed [COMMUN] The rate at which code elements are transmitted by a communications system. { 'sig·nəl ˌspēd }

signal standardization [COMMUN] The use of one signal to