

**McGRAW-HILL
DICTIONARY OF
SCIENTIFIC AND
TECHNICAL
TERMS**

**Sixth
Edition**

McGraw-Hill

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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.

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A rounded eminence, such as a knoll, hillock, or small hill or mountain, and especially a prominent or isolated hill with steep sides. 2. A peak or other projection at the top of a hill or mountain. { 'nɒb }

knob-and-tube wiring [ELEC] An electric wiring method used for light and power circuits that uses open insulated wiring on solid insulators; now obsolete and illegal in most countries. { 'nɒb ən 'tjuːb ,wɪr-ɪŋ }

knocker See shell knocker. { 'nɒk-ər }

knock intensity [ENG] The intensity of knock (detonation) recorded when testing a motor gasoline for octane or knock rating. { 'nɒk ɪn'ten-səd-ə }

knockmeter [ENG] A fuels-testing device used to measure the output of the detonation meter used in American Society for Testing and Materials knock-test ratings of motor fuels. { 'nɒk ,mɛd-ər }

knock-off [MECH ENG] 1. The automatic stopping of a machine when it is operating improperly. 2. The device that causes automatic stopping. { 'nɒk,ɒf }

knock-off bit See detachable bit. { 'nɒk,ɒf ,bit }

knock-on atom [SOLID STATE] An atom which is knocked out of its equilibrium position in a crystal lattice by an energetic bombarding particle, and is displaced many atomic distances away into an interstitial position, leaving behind a vacant lattice site. { 'nɒk,ɒn ,əd-əm }

knockout [ENG] A partially cutout piece in metal or plastic that can be forced out when a hole is needed. [GEN] Inactivation of a specific gene in a laboratory organism in order to study gene function. { 'nɒk,aʊt }

knockout pin See ejector pin. { 'nɒk,aʊt ,pin }

knockout vessel [CHEM ENG] A vessel, drum, or trap used to remove fluid droplets from flowing gases. { 'nɒk,aʊt ,ves-əl }

knock rating [ENG] Rating of gasolines according to knocking tendency. { 'nɒk,aʊt ,ræd-ɪŋ }

knock suppressor [MATER] A material added to motor fuel to retard or prevent detonation and resultant knock in reciprocating internal combustion engines; an example is tetraethyllead. { 'nɒk,aʊt sə,pres-ər }

Knoevenagel reaction [ORG CHEM] The condensation of aldehydes with compounds containing an activated methylene (=CH₂) group. { kə'neɪ-və,næg-əl rɛ,ak-shən }

knoll [GEOL] A mound rising less than 3300 feet (1000 meters) from the sea floor. Also known as sea knoll. { 'nɒl }

Knoop hardness [MET] The relative microhardness of a material, such as metal, determined by the Knoop indentation test. { 'nʊp ,hɑrd-nəs }

Knoop indentation test [MET] A diamond pyramid hardness test employing the Knoop indenter; hardness is determined by the depth to which the Knoop indenter penetrates. { 'nʊp ,ɪn,dent-ɪ'shən ,test }

Knoop indenter [MET] A diamond indenter which has a rhombic base with diagonals in a 1:7 ratio and included apical angles of 130° and 172°30'; used in the Knoop indentation test. { 'nʊp ɪn'dent-ər }

knop [TEXT] A yarn with pronounced knots of different color or of different material appearing at intervals. Also known as knotted yarn; nub yarn. { nɒp }

knopite [MINERAL] A cerium-bearing variety of perovskite. { 'nɒ,pɪt }

Knorr synthesis [ORG CHEM] A condensation reaction carried out in either glacial acetic acid or an aqueous alkali in which an α-aminoketone combines with an α-carbonyl compound to form a pyrrole; possibly the most versatile pyrrole synthesis. { 'nɒr ,sɪn-thə-səs }

knot [COMPUT SCI] See deadlock. [MATER] A scar on lumber marking a place where a branch grew out of the tree trunk. [MATH] In the general case, a knot consists of an embedding of an n-dimensional sphere in an (n + 2)-dimensional sphere; classically, it is an interlaced closed curve, homeomorphic to a circle. [ORG CHEM] A chiral structure in which rings containing 50 or more members have a knotlike configuration. [PHYS] A speed unit of 1 nautical mile (1.852 kilometers) per hour, equal to approximately 0.51444 meters per second. { nɒt }

knotted yarn See knop. { 'nɒd-əd 'jɑrn }

knot theory [MATH] The topological and algebraic study of knots emphasizing their classification and how one may be continuously deformed into another. { 'nɒt ,θɛ-ə-rɛ }

knowbot [COMPUT SCI] A program which, when given a request, searches and retrieves information on the Internet. Also known as intelligent agent, knowledge robot. { 'nəʊ,bɒt }

knowledge base [COMPUT SCI] A collection of facts, assumptions, beliefs, and heuristics that are used in combination with a database to achieve desired results, such as a diagnosis, an interpretation, or a solution to a problem. { 'nɒl-ɪj ,bæs }

knowledge-based system [COMPUT SCI] A computer system whose usefulness derives primarily from a data base containing human knowledge in a computerized format. { 'nɒl-ɪj ,bæst ,sɪs-təm }

knowledge discovery in databases [COMPUT SCI] The process of identifying valid, novel, potentially useful, and ultimately understandable structure in data. Abbreviated KDD. { 'nɒl-ɪj dɪs'kʌv-ə-rɛ ɪn 'dɑd-ə,bæs-əs }

knowledge engineer [COMPUT SCI] An individual who constructs the knowledge base of an expert system. { 'nɒl-ɪj ,en-ʒə,nɪr }

knowledge robot See knowbot. { 'nɒl-ɪj ,rɒ,bɒt }

known-good die [ELECTR] An unpackaged, fully tested integrated circuit chip. { ,nɒn 'gʊd 'di }

Knox and Oxborne furnace [MIN ENG] A continuously working shaft furnace for roasting quicksilver ores, having the fireplace built in the masonry at one side; the fuel is wood. { 'nɒks ən 'ɒks-bɔrn ,fɔr-nəs }

knoxvillite See copiapite. { 'nɒks-vɪ,lɪt }

knuckle [MIN ENG] The place on an incline where there is a sudden change in grade. { 'nɒk-əl }

knuckle joint [DES ENG] A hinge joint between two rods in which an eye on one piece fits between two flat projections with eyes on the other piece and is retained by a round pin. { 'nɒk-əl ,dʒɔɪnt }

knuckle joint press [MECH ENG] A short-stroke press in which the slide is actuated by a crank attached to a knuckle joint hinge. { 'nɒk-əl ,dʒɔɪnt ,pres }

knuckle man [MIN ENG] A worker who connects mine cars to and disconnects them from cables and also couples cars into trains. { 'nɒk-əl ,man }

knuckle pin [DES ENG] The pin of a knuckle joint. { 'nɒk-əl ,pin }

knuckle post [MECH ENG] A post which acts as the pivot for the steering knuckle in an automobile. { 'nɒk-əl ,pɒst }

Knudsen cell [PHYS CHEM] A vessel used to measure very low vapor pressures by measuring the mass of vapor which escapes when the vessel contains a liquid in equilibrium with its vapor. { kə'nʊd-sən ,sel }

Knudsen cosine law [PHYS] A law which states that the probability of a gas molecule leaving a solid surface in a given direction within a solid angle dω is proportional to cos θ dω, where θ is the angle between the direction and the normal to the surface. { kə'nʊd-sən 'kɒs,ɪn ,lə }

Knudsen flow See free molecule flow. { kə'nʊd-sən ,flə }

Knudsen gage [ENG] An instrument for measuring very low pressures, which measures the force of a gas on a cold plate beside which there is an electrically heated plate. { kə'nʊd-sən ,gæj }

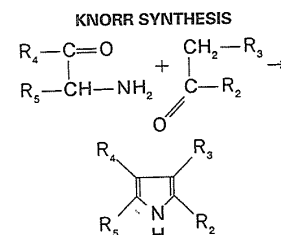
Knudsen-Langmuir equation [CHEM ENG] Relationship of molecular distillation rate to vapor saturation pressure, solution temperature, and molecular weight during evaporation and no-recycle condensation. { kə'nʊd-sən 'lɑŋ,mjʊr i,kwə-zən }

Knudsen number [FL MECH] The ratio of the mean free path length of the molecules of a fluid to a characteristic length; used to describe the flow of low-density gases. { kə'nʊd-sən ,nəm-bər }

Knudsen reversing water bottle [ENG] A type of frameless reversing bottle for collecting water samples; carries reversing thermometers. { kə'nʊd-sən rɪ'vɜrs-ɪŋ 'wɒd-ər ,bɑd-əl }

Knudsen's equation [PHYS] An equation for the amount of gas that flows through a tube in free molecule flow, $q\sqrt{2\pi\Delta p d^3/6l\rho}$, where q is the volume of gas measured at unit pressure that flows through the tube per second, Δp is the difference between the pressures at the ends of the tube, d is the inside diameter of the tube, l is the length of the tube, and ρ is the density of the gas at unit pressure. { kə'nʊd-sən z i,kwə-shən }

Knudsen's tables [OCEANOGR] Hydrographical tables published by Martin Knudsen in 1901 to facilitate the computation



An α-aminoketone combines with an α-methylene carbonyl compound to form a pyrrole.