

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

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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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in a second immiscible liquid; the largest group of emulsifying agents are soaps, detergents, and other compounds, whose basic structure is a paraffin chain terminating in a polar group. (ə,məl-sə-fə'kə-shən)

emulsification test [CHEM ENG] Standard laboratory procedure for evaluating the resistance of insulating oils, turbine oils, and other lubricating oils to emulsification. (ə,məl-sə-fə'kə-shən, test)

emulsified asphalt [MATER] An emulsion of asphalt cement and water with a small quantity of an emulsifying agent. (ə'məl-sə,fɪd'as,fəlt)

emulsified water [PETRO ENG] Water so thoroughly dispersed in petroleum that special treatment procedures are required to separate it. (ə'məl-sə,fɪd'wɔd-ər)

emulsifier See disperser. (ə'məl-sə,fɪ-ər)

emulsifying agent See disperser. (ə'məl-sə,fɪ-ɪŋ, ə-jənt)

emulsifying oil See soluble oil. (ə'məl-sə,fɪ-ɪŋ, oil)

emulsion [CHEM] A stable dispersion of one liquid in a second immiscible liquid, such as milk (oil dispersed in water). [GRAPHICS] In photography, the photosensitized material on film, plates, and various photographic papers. (ə'məl-shən)

emulsion breaking [CHEM] In an emulsion, the combined sedimentation and coalescence of emulsified drops of the dispersed phase so that they will settle out of the carrier liquid; can be accomplished mechanically (in settlers, cyclones, or centrifuges) with or without the aid of chemical additives to increase the surface tension of the droplets. (ə'məl-shən, bræk-ɪŋ)

emulsion cleaner [CHEM ENG] A cleaner composed of organic solvents dispersed in an aqueous solution with the aid of an emulsifying agent. (ə'məl-shən, klēn-ər)

emulsion jet [NUCLEO] A jetlike formation in a nuclear emulsion caused by an incident particle with very high energy, greater than 100 GeV. (ə'məl-shən, jet)

emulsion paint [MATER] Paint whose vehicle is an emulsion of a binder (oil, resin, latex, and so on) in water. (ə'məl-shən, pənt)

emulsion polymerization [ORG CHEM] A polymerization reaction that occurs in one phase of an emulsion. (ə'məl-shən, pə,līm-ə-rə'zā-shən)

emulsion speed [GRAPHICS] Sensitivity of a photographic emulsion to light, under standard conditions of exposure and development. (ə'məl-shən, spəd)

Emydidae [VERT ZOO] A family of aquatic and semiaquatic turtles in the suborder Cryptodira. (ə'mid-ə,dē)

en [GRAPHICS] A unit of linear type measure; equal to one-half the point size of the type in question, that is, equal to one-half the width of an em. (en)

enable [COMPUT SCI] 1. To authorize an activity which would otherwise be suppressed, such as to write on a tape. 2. To turn on a computer system or a piece of equipment. [ELECTR] To initiate the operation of a device or circuit by applying a trigger signal or pulse. (ə'nā-bəl)

enabled instruction [COMPUT SCI] An instruction in a program in data flow language, all of whose input values are present, so that the instruction may be carried out. (ə'nā-bəld in'strək-shən)

enabling pulse [ELECTR] A pulse that prepares a circuit for some subsequent action. (ə'nāb-ɪŋ, pəls)

Enallornithidae [PALEON] A family of extinct birds assigned to the order Hesperornithiformes, having well-developed teeth found in grooves in the dentary and maxillary bones of the jaws. (ə'nāl-ə-ŋrɪnɪθ-ə,dē)

enamel [MATER] A finely ground, resin-containing oil paint that dries relatively harder, smoother, and glossier than ordinary paint. See glaze. (i'nam-əl)

enamel clay [MATER] A ball clay able to float nonplastic enamel slips to make them spray or dip more evenly. (i'nam-əl, klā)

enameled brick [MATER] Brick with a smooth hard surface acquired from the application of a special wash before burning. (i'nam-əld 'brɪk)

enameling [ENG] The application of a vitreous glaze to pottery or metal surfaces, followed by fusing in a kiln or furnace. (i'nam-ɪŋ)

enamel kiln [ENG] A kiln in which enamel colors are fired. (i'nam-əl, kɪl)

enamel organ [EMBRYO] The epithelial ingrowth from the dental lamina which covers the dental papilla, furnishes a mold

for the shape of a developing tooth, and forms the dental enamel. (i'nam-əl, ōr-gən)

enamel oxide [MATER] Any of the mixtures of calcined oxides used to color vitreous enamels used on sheet steel or cast iron. (i'nam-əl 'ak,sɪd)

enamel paper See coated paper. (i'nam-əl, pə-pər)

enamine [ORG CHEM] An amine in which there is a carbon-to-carbon double bond adjacent to the nitrogen, $-C=C-N-$; considered to be the nitrogen analog of an enol. (i'en-ə,mēn)

enantiomorph See enantiomorph. (ə'nān-tē-ŋ-mər)

enantiomorphically pure [ORG CHEM] Referring to a sample of molecules having the same chirality. IUPAC discourages use of homochiral as a synonym. (ə'nān-tē-ŋ-mər-ə-kle 'pyʊr)

enantiomeric excess [ORG CHEM] In an asymmetric synthesis, a chemical yield that contains more of the desired enantiomer than other products. (ə'nān-tē-ŋ-mər-ɪk ek'ses)

enantiomorph [CHEM] One of an isomeric pair of either crystalline forms or chemical compounds whose molecules are nonsuperimposable mirror images. Also known as enantiomer; optical antipode; optical isomer. (ə'nān-tē-ŋ-mɔrf)

enantiomorphism [CHEM] A phenomenon of mirror-image relationship exhibited by right-handed and left-handed crystals or by the molecular structures of two stereoisomers. (ə'nān-tē-ŋ-mɔr,fɪz-əm)

Enantiornithines [VERT ZOO] Opposite birds, so called because their foot bones fuse in the opposite direction of modern birds, from the subclass Sauriuvae. (i,nān-tē-ŋ-m-ə,thēnz)

enantioselective reaction See stereoselective reaction. (ə'nān-tē-ŋ-sɪ'lek-tɪv rē'ak-shən)

enantiotopic ligand [ORG CHEM] A ligand whose replacement or addition gives rise to enantiomers. (ə'nān-tē-ŋ-tɒp-ɪk 'lɪg-ənd)

enantiotropy [CHEM] The relation of crystal forms of the same substance in which one form is stable above the transition-point temperature and the other stable below it, so that the forms can change reversibly one into the other. (ə'nān-tē-ŋ-trɒ-pē)

Enantiozoa [INV ZOO] The equivalent name for Parazoa. (ə'nān-tē-ŋ-zō-ə)

enargite [MINERAL] A lustrous, grayish-black mineral which is found in orthorhombic crystals but is more commonly columnar, bladed, or massive; hardness is 3 on Mohs scale, specific gravity is 4.44; in some places enargite is a valuable copper ore. Also known as clairite; luzonite. (e'nār'jɪt)

enarthrosis [ANAT] A freely movable joint that allows a wide range of motion on all planes. Also known as ball-and-socket joint. (e,nār'thrō-səs)

Encalyptales [BOT] An order of true mosses (subclass Bryidae) characterized by broad papillose leaves and erect capsules covered by very long calyptrae. (en,kə'lip'tā-lēz)

encapsulate [SCI TECH] To surround, encase, or enclose as if in a capsule; for example, the formation of a protective coating around a bacterium, or the enclosure of an item such as an electronic component in plastic. (en'kap-sə,lāt)

encestré beam See fixed-end beam. (än-ka-strā bēm)

encaustic [GRAPHICS] A method of painting in which the pigment is carried in hot wax. (en'kōs-tik)

Enceladus [ASTRON] A satellite of Saturn orbiting at a mean distance of 153,600 miles (238,000 kilometers). (en-se'lä-düs)

encephalitis [MED] Inflammation of the brain. (en,sef-ə'lɪd-əs)

encephalitis lethargica [MED] Epidemic encephalitis, probably of viral etiology, characterized by lethargy, ophthalmoplegia, hyperkinesia, and at times residual neurologic disability, particularly parkinsonism with oculogyric crisis. Also known as epidemic encephalitis; sleeping sickness; von Economo's disease. (en,sef-ə'lɪd-əs læ'thär-jə-kə)

encephalocoele [MED] Hernia of the brain through a congenital or traumatic opening in the cranium. (en'sef-ə-lō,sēl)

encephalogram [MED] A roentgenogram of the brain made in encephalography. (en'sef-ə-lə,gram)

encephalography [MED] Roentgenography of the brain following removal of cerebrospinal fluid, by lumbar or cisternal puncture, and its replacement by air or other gas. (en,sef-ə'läg-rə-fē)

encephaloid carcinoma See medullary carcinoma. (en'sef-ə,lōid,kärs-ən-ŋ-mə)

encephalomalacia [MED] 1. Infarction of the brain. 2.