

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

**Sixth
Edition**

HANWHA v. MAXEON
IPR2024-01198
HANWHA 1134

McGraw-Hill

Page 1 of 5

New York Chicago San Francisco
Lisbon London Madrid Mexico City
Milan New Delhi San Juan Seoul Singapore Sydney Toronto

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**

Copyright © 2003, 1994, 1989, 1984, 1978, 1976, 1974 by The McGraw-Hill Companies, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0 DOW/DOW 0 8 7 6 5 4 3 2

ISBN 0-07-042313-X

Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of scientific and technical terms--6th ed.

p. cm.

ISBN 0-07-042313-X (alk. paper)

1. Science--Dictionaries. 2. Technology--Dictionaries. I. Title: Dictionary of scientific and technical terms.

Contents

Preface	vii
Staff	viii
Consulting Editors	viii
How to Use the Dictionary	ix
Field Abbreviations	x
Scope of Fields	xi
Notes on Pronunciation	xv
Pronunciation Key	xvii
Dictionary of Scientific and Technical Terms	1-2324
Appendix	2325
U.S. Customary System and the metric system	2327
International System	2327
Conversion factors for the measurement systems	2329
Units of temperature in measurement systems	2329
Symbols for the chemical elements	2332
Chemical nomenclature	2332
Symbols in scientific writing	2333
Periodic table of the elements	2336
Mathematical signs and symbols	2338
Mathematical notation	2338
Fundamental constants	2340
Elementary particles	2343
Schematic electronic symbols	2344
Geological time scale and related aspects	2349
Classification of living organisms	2350
Biographical listing	2359

Field Abbreviations

ACOUS	acoustics	INV ZOO.....	invertebrate zoology
AERO ENG	aerospace engineering	LAP.....	lapidary
AGR	agriculture	LING	linguistics
ANALY CHEM.....	analytical chemistry	MAP	mapping
ANAT	anatomy	MATER	materials
ANTHRO.....	anthropology	MATH.....	mathematics
ARCH	architecture	MECH.....	mechanics
ARCHEO.....	archeology	MECH ENG	mechanical engineering
ASTRON.....	astronomy	MED.....	medicine
ASTROPHYS	astrophysics	MET	metallurgy
ATOM PHYS.....	atomic physics	METEOROL	meteorology
BIOCHEM	biochemistry	MICROBIO	microbiology
BIOL	biology	MIN ENG	mining engineering
BIOPHYS	biophysics	MINERAL	mineralogy
BOT	botany	MYCOL	mycology
BUILD	building construction	NAV	navigation
CELL MOL.....	cell and molecular biology	NAV ARCH	naval architecture
CHEM.....	chemistry	NEUROSCI.....	neuroscience
CHEM ENG	chemical engineering	NUCLEO.....	nucleonics
CIV ENG.....	civil engineering	NUC PHYS.....	nuclear physics
CLIMATOL.....	climatology	OCEANOGR	oceanography
COMMUN	communications	OPTICS	optics
COMPUT SCI	computer science	ORD	ordnance
CONT SYS	control systems	ORG CHEM.....	organic chemistry
CRYO	cryogenics	PALEOBOT	paleobotany
CRYSTAL.....	crystallography	PALEON.....	paleontology
DES ENG	design engineering	PARTIC PHYS.....	particle physics
ECOL	ecology	PATH	pathology
ELEC	electricity	PETR.....	petrology
ELECTR.....	electronics	PETRO ENG	petroleum engineering
ELECTROMAG	electromagnetism	PHARM	pharmacology
EMBRYO	embryology	PHYS.....	physics
ENG	engineering	PHYS CHEM	physical chemistry
ENG ACOUS	engineering acoustics	PHYSIO	physiology
EVOL	evolution	PL PATH	plant pathology
FL MECH.....	fluid mechanics	PL PHYS.....	plasma physics
FOOD ENG	food engineering	PSYCH.....	psychology
FOR.....	forestry	QUANT MECH	quantum mechanics
FOREN SCI	forensic science	RELAT	relativity
GEN	genetics	SCI TECH	science and technology
GEOCHEM	geochemistry	SOLID STATE.....	solid-state physics
GEOD	geodesy	SPECT	spectroscopy
GEOCR.....	geography	STAT	statistics
GEOL	geology	STAT MECH	statistical mechanics
GEOPHYS	geophysics	SYS ENG	systems engineering
GRAPHICS	graphic arts	SYST	systematics
HISTOL	histology	TEXT.....	textiles
HOROL.....	horology	THERMO	thermodynamics
HYD.....	hydrology	VERT ZOO	vertebrate zoology
IMMUNOL	immunology	VET MED	veterinary medicine
IND ENG.....	industrial engineering	VIROL	virology
INORG CHEM	inorganic chemistry	ZOO	zoology

metallurgy—The branch of engineering concerned with the production of metals and alloys, their adaptation to use, and their performance in service; and the study of chemical reactions involved in the processes by which metals are produced, and of the laws governing the physical, chemical, and mechanical behavior of metallic materials.

meteorology—The science concerned primarily with the observation of the atmosphere and its phenomena, including temperature, density, winds, clouds, and precipitation.

microbiology—The science and study of microorganisms and of antibiotic substances.

mineralogy—The study of naturally occurring inorganic substances, called minerals, whether of terrestrial or extraterrestrial origin.

mining engineering—The branch of engineering concerned with the location and evaluation of coal and mineral deposits, the survey of mining areas, the layout and equipment of mines, the supervision of mining operations, and the cleaning, sizing, and dressing of the product.

mycology—The branch of biological science concerned with the study of fungi.

naval architecture—The study of the physical characteristics and the design and construction of buoyant structures which operate in water, and of the construction and operation of the power plant and other mechanical equipment of these structures.

navigation—The science or art of directing the movement of a craft, such as a ship, small marine craft, underwater vehicle, land vehicle, aircraft, missile, or spacecraft, from one place to another with the assistance of onboard equipment, objects, or devices, or of systems external to the craft.

neuroscience—The study of the brain and nervous system, including the anatomy and histology of the nervous system, development, sensation and perception, learning, memory, motor control, behavior, aging, and neurological and psychiatric disorders. Studies range from the molecular basis of nervous system development and function to attempts to understand the basis of consciousness and behavior.

nuclear physics—The study of the characteristics, behavior, and internal structure of the atomic nucleus.

nucleonics—The technology based on phenomena of the atomic nucleus such as radioactivity, fission, and fusion; includes nuclear reactors, various applications of radioisotopes and radiation, particle accelerators, and radiation detection devices.

oceanography—The science of the sea, including physical oceanography (the study of the physical properties of seawater and its motion in waves, tides, and currents), marine chemistry, marine geology, and marine biology.

optics—The study of phenomena associated with the generation, transmission, and detection of electromagnetic radiation in the spectral range extending from the long-wave edge of the x-ray region to the short-wave edge of the radio region; and the science of light.

ordnance—That military area concerned with supplies, including weapons, ammunition, combat vehicles, and the necessary repair equipment; and with heavy firearms discharged from mounts, including cannons and artillery.

organic chemistry—The study of the structure, preparation, properties, and reactions of carbon compounds.

paleobotany—The study of fossil plants and vegetation of the geologic past.

paleontology—The study of life in the geologic past as recorded by fossil remains.

particle physics—The branch of physics concerned with understanding the properties, behavior, and structure of elementary particles, especially through study of collisions or decays involving energies of hundreds of megaelectronvolts or more.

pathology—The branch of biological science which deals with the nature of disease, through study of its causes, its processes, and its effects, together with the associated alterations of structure and function; and the laboratory findings of disease, as distinguished from clinical signs and symptoms.

petroleum engineering—The branch of engineering concerned with the search for and extraction of oil, gas, and liquefiable hydrocarbons; usually subdivided into petrophysical, geological, reservoir drilling, production, and construction engineering.

petrology—The branch of geology dealing with the origin, occurrence, structure, and history of rocks, especially igneous and metamorphic rocks.

pharmacology—The science of detecting and measuring the therapeutic and toxic effects of drugs or other chemicals on biological systems, as well as the development and testing of new drugs and alternative uses of existing drugs.

physical chemistry—The branch of chemistry that deals with the interpretation of chemical phenomena and properties in terms of the underlying physical processes, and with the development of techniques for their investigation.

physics—The science concerned with those aspects of nature which can be understood in terms of elementary principles and laws.

physiology—The branch of biological science concerned with the basic activities that occur in cells and tissues of living organisms and involving physical and chemical studies of these organisms.

plant pathology—The branch of botany concerned with diseases of plants.

plasma physics—The study of highly ionized gases.

psychology—The science of the function of the mind and the behavior of an organism, both animal and human, in relation to its environment.

quantum mechanics—The modern theory of matter, of electromagnetic radiation, and of the interaction between matter and radiation; it differs from classical physics, which it generalizes and supersedes, mainly in the realm of atomic and subatomic phenomena.

relativity—The study of the physical theory which recognizes the universal character of the propagation speed of light and the consequent dependence of space, time, and other mechanical measurements on the motion of the observer performing the measurements; the two main divisions are special theory and general theory.

science and technology—The study of the natural sciences and the application of this knowledge for practical purposes.

solid-state physics—The branch of physics centering on the physical properties of solid materials; it is usually concerned with the properties of crystalline materials only, but it is sometimes extended to include the properties of glasses or polymers.