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麦格劳-希尔 英汉双解 科技大词典

McGraw-Hill Dictionary
of
Scientific and Technical Terms

外语教学与研究出版社
FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS
麦格劳-希尔教育集团
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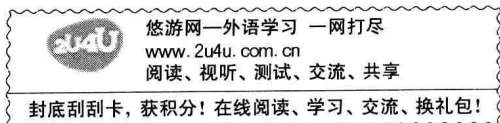
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出版说明

历经数载的艰苦努力，这部《麦格劳-希尔英汉双解科技大词典》终于呈现在了广大读者的面前。本词典以《麦格劳-希尔科技大词典》最新的第六版为底本翻译而成，可说是中美两国出版社强强联合的结晶。全书秉持为科学同仁和普通读者共同服务的精神，以期实现编者对科学教育和技术普及的工作略尽绵薄之力的愿望。值得一提的是，在国内，出版规模如此之大的英汉双解科技词典还是首次，而这部词典本身也具有诸多鲜明的特色，概括起来主要有以下五点：

一、海量的收词。《麦格劳-希尔科技大词典》自20世纪70年代推出第一版以来，一直紧跟科学技术发展的步伐，与时俱进，添新去旧。至本版词典，全书共收录词条11万个，释义12.5万项。其中，约5000个词条是在前版的基础上新增的，许多用法发生变化的词条也得到了修订。这在很大程度上满足了各类科技专业人员和知识面越来越广的普通读者群的需要。

二、细分的学科。随着当代科学研究的飞速发展，学科分类也相应地发生了变化。本版词典因应这些变化，对学科领域作出了全新的调整和更为细致科学的划分。全书共分学科104个，每个词条的每项释义均有学科标注。除了常见的大学科（物理学、化学等）之外，还有工程声学、造船学等更为专业的学科和等离子体物理学、法医学等近几十年来的新兴学科。举例来说，除了有生物学这样一个大学科外，与其相关的细分学科就有植物学、动物学、无脊椎动物学、脊椎动物学、真菌学、微生物学、病毒学、古植物学、古生物学、生物化学、生物物理学、生物进化学、细胞和分子生物学、生态学、胚胎学、遗传学、免疫学、生理学、植物病理学等大大小小近20个，真可算是把生物学领域的重要学科一网打尽了。

三、精准的释义。本版词典的每个词条都带有英语和中文两种释义。英文释义保留自《麦格劳-希尔科技大词典》，其科学准确、简明易懂在国际上有口皆碑。而本次双解版的中文释义更是遵循了两个原则：其一，**坚持科学术语的规范和统一。**凡是全国科学技术名词审定委员会公布的译名都尽量采用，对于尚未有规定译名的最新词汇和外国人名翻译，则尽力收纳通行的译法，纠正了许多国内出版的科技词典译法不统一的尴尬现象。对于一些疑难词汇，我们还虚心请教了中国科学院和国内高校在各领域的专家。其二，**力求辨别对应词相同、意义却存在差别的中文译法。**原版的英文释义重在精细，同一学科下意义略有不同的数个释义都会分项列出。双解版针对这一特点，特别是在同一学科下数项释义的中文对应词相同的情况下，亦根据英文简单明了地添加中文解释，让读者领会其差异。这是许多只对对应词的英汉科技词典和词汇手册所不具备的特色。例如，baroswitch一词在“工程”这一学科下有两项释义，中文对应词皆为“气压开关”，请看本版词典的中文解释：1. 气压开关（无线电探空仪上由大气压力控制的开关装置）；2. 气压开关（泛指任何通过气压变化控制的开关）。这样一来，读者对其差别就一目了然了。

四、周到的插图。本版词典为帮助读者理解词条，特地给许多释义配上了插图，总计达1700余幅。试想一下，许多动植物种类、机械部件、甚至电路图等等，三言两语难以说清，而一幅插图就能立刻给予读者直观的认识。

五、全面的注音。一般的科技词典，很难做到为词条标注音标。即使标注，也仅针对单词条目，大量的复合词条目无法顾及。但是，科技词汇的特色恰恰是复合词条目占了相当大的比重，而且难词、偏词特别多。本版词典保留了《麦格劳-希尔科技大词典》一贯的特色，即为每个词条都标注了音标。读者在熟悉了其音标体系后（具体可参见发音表），可以比较方便地掌握科技词汇的发音。这也是这本词典区别于其他科技词典的一个独到之处。

当然，将这样一本规模庞大的英语科技词典做成英汉双解版，这其中存在的困难可想而知，错误也在所难免。我们一方面期望这本词典的推出能为中外科技发展的交流出一份力，能为国内科技知识的普及作出一点贡献，另一方面也非常希望广大读者朋友批评指正，多提宝贵意见，以期将来为大家奉上更为优质的科技词典。

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Preface 序言

The first edition of the *McGraw-Hill Dictionary of Scientific and Technical Terms*, published in 1974, was a response to the inadequate representation of scientific terminology in general English language dictionaries. It was a time when the fruits of research and development in the era following World War II were transforming everyday life in areas ranging from medicine, to transportation, to telecommunications and computing. Humans had already landed on the Moon; the creation of the Internet had begun; the first microprocessors were in operation; and the revolution in molecular biology was underway. English was becoming more and more the common language of scientific research. The first edition of the *Dictionary* was intended primarily for those involved in these developments; the communities of scientific and engineering specialists and their students. However, over the span of subsequent editions, an understanding of the language of science and technology became important if not essential in many areas of commerce and culture, and even in everyday life as we try to make informed decisions about our environment, medical issues, and even the foods we eat. Thus, the audience for this, the sixth edition of the *Dictionary*, has expanded to the nonspecialist needing a comprehensive yet accessible resource for scientific terminology.

The language of science and technology is expanding not only in its role in our culture; it is growing in its breadth and depth as scientific disciplines mature and whole new technologies, such as nanotechnology and genomics, arise. The effects of the ready availability of powerful, networked computers and broadband communications have been felt in all areas of science; the pace of scientific discovery and dissemination of information has increased dramatically. The sequencing of the human genome well ahead of the original schedule is a prime example of the accelerating pace of discovery enabled by powerful technologies. Often, the economic and other benefits of scientific and technical advances must be weighed against potential or real deleterious consequences, for example in relation to biotechnology, environmental protection, and human health. The need to understand these issues has grown outward from the scientific specialists to educators, journalists, political leaders, and informed citizens.

To keep pace with the expanding language of science as well as the growing circle of persons concerned with it, some 5000 new terms have been added to this edition of the *Dictionary*, and many other terms have been revised as their usage evolves. The classification of terminology into fields has also seen changes reflecting more modern usage. For example, forensic science and neuroscience are now separate categories. Other fields have been kept, but their definitions updated as these sciences evolve. The reader will also appreciate that the multidisciplinary approach of modern science often makes neat categorization of terms difficult; for example, a term might fit in biochemistry, genetics, or microbiology as well as in cell and molecular biology. The *Dictionary* now has some 110,000 terms with 125,000 definitions. Many definitions are complemented by illustrations. In addition to new illustrations, many older ones were replaced with modern examples. Synonyms, acronyms, and abbreviations are given within definitions as well as in the alphabetical sequence as separate entries, where cross references to principal terms are provided. Every term is accompanied by its pronunciation, and a detailed guide to pronunciation follows this Preface. Where units of measurement are essential to the definition of a term, U. S. Customary units are used with International System (SI) or metric equivalents.

《麦格劳-希尔科技大词典》的第一版刊行于1974年,在当时是为了解决一般英语词典中科技词汇普遍不足的问题。时值第二次世界大战结束后科技研发硕果累累的年代,人们日常生活的方方面面,从医疗、交通、通信,再到计算机,无不因这些科技成果而时刻发生着变化。人类已经登上了月球,因特网刚刚问世,第一批微处理器投入使用,分子生物学领域的革命如火如荼。英语愈来愈成为科学研究的通用语言。《科技大词典》第一版旨在服务于这些发展领域的相关人员:科学家、工程师,和他们的学生。不过,随着一系列新版本的陆续推出,这一情况已经发生了变化。在贸易和文化的诸多领域,对科技语言的掌握即使称不上是必不可少,至少也是日益重要起来,而在日常生活中,当我们需要在环境、医疗、甚至饮食等方面作出科学的决定时,情形亦是如此。有鉴于此,这本《科技大词典》第六版的读者对象,已经扩展到了需要广泛且便捷地获取科学术语的广大非专业人士。

在我们的文化中,科技语言不仅正扮演着越来越重要的角色,而且随着各学科的成熟和全新技术的出现(纳米技术、基因组学,等等),其广度和深度也正不断扩展。功能强大的联网计算机、快捷的宽带通信,其影响在一切科学领域都能够感觉得到;科学发现和信息传播的速度正以几何级数跃进。人类基因测序的进展大大快于预期,就是强大的技术推动科学发现步伐的一个极佳例子。当然,在享受科技进步带来的经济利益和其他好处的同时,也需要权衡可能的或实在的危害性后果,例如关系到生物科技、环境保护、人类健康的方面等。了解这些议题的需要已不仅只来自科学领域的专家,从教育工作者、记者、政治领袖,到有见识的普通公民,都加入了这一队伍。

为了跟上科学语言扩展的步伐,以及数量越来越大的相关人群,《科技大词典》第六版在前版的基础上增加了大约5000个全新的词条,并且对许多用法发生变化的词条作出了修订。为了更好地反应当代的使用习惯,术语的学科分类也发生了一些变化。举例来说,法医学和神经科学现在已经成为了独立的分类。一些学科领域被保留了下来,但是随着这些学科的发展进化,其定义产生了新的内容。读者同样会注意到,由于现代科学研究中经常采用多学科的方法,这使得一刀切的纯粹分类变得十分困难(某个术语可能同时属于生物化学、遗传学、微生物学及细胞和分子生物学)。本版词典现收录约11万词条,12.5万项释义。许多释义还配有插图。这些插图中不仅有新增的,还有对过时插图的替换。同义词、首字母缩拼词和缩略词不仅在释义中给出,还按照英文字母的排列顺序作为独立词条出现,并参见到主词条。每个词条都标注了音标,关于注音的详细情况可在序言后的发音表中找到。当一个词条的释义中,计量单位不可或缺时,除了常用的美制单位,还给出了相应的国际制或米制单位。

The editorial staff of the *Dictionary* endeavored to provide definitions that the nonspecialist reader could understand without losing the scientific meaning and context of the term. Each definition is identified by its field of use. There are 104 fields, ranging from general categorizations such as astronomy [ASTRON] and physics [PHYS] to specialized ones such as engineering acoustics [ENG ACOUS] and naval architecture [NAV ARCH]. A definition is identified as belonging to the vocabulary of a specific field; where it is used in more than one field, a more general field is designated. For example, if a definition is used in the field of analytical chemistry and inorganic chemistry, it is assigned to the field of chemistry. An alphabetical list of field abbreviations and an explanation of the scope of each field begins on page xi.

The Appendix contains a full explanation of the International System of units, including units of temperature, with conversion tables for the U. S. Customary and the metric systems. It also includes a table of the chemical elements, along with an explanation of chemical nomenclature; a periodic table; lists of mathematical notation; mathematical signs and symbols, and other symbols used in scientific writing; tables of fundamental constants and elementary particles; a short chart of schematic electronic symbols; a geological time scale; a biographical listing of more than 1600 noted scientists, both historical and modern, many of whose names appear in dictionary terms; and an outline of the classification of living organisms.

An explanation of how to use the *Dictionary*, describing alphabetization, format, cross referencing, and more, can be found on page ix. A Pronunciation Key appears on page xvii.

This sixth edition of the *McGraw-Hill Dictionary of Scientific and Technical Terms* continues to serve the needs of both the scientific community and the general reader for highquality information, and to contribute to scientific education and technological literacy.

Mark D. Licker
Publisher

马克·D·利克
出版者

《科技大词典》的编辑组成员致力于这样一个目标:即在不丢失术语的科学意义和语境的同时,能够让非专业的读者也理解这些词汇。每项释义都注有学科标签。这样的学科共有104个,范围从大的分类(例如,天文学【天】、物理学【物】)到专门的分类(工程声学【工程声学】、造船学【造船】),不一而足。任一释义均被划入特定的学科;如果该释义的使用不限于单个学科,则会对它标注一个涵盖范围更广的学科标签。例如,如果一项释义同时用于分析化学和无机化学领域,则会将它划入化学这一学科。按英文字母顺序排列的学科略语一览表和对每个学科涵盖范围的说明,可参见从第 xi 页开始的内容。

附录中有对国际单位制的完整说明(包括了温度单位),以及换算成美制和米制的系数表。附录的内容还包括:化学元素表;化学命名法;化学元素周期表;数学记号和符号;科学写作中的其他符号;基本常数和粒子表;电子器件符号表;地质年代表;1600多位著名科学家的生平简介(这些科学家既有历史上的,也包含了当代的,其中许多人的姓名出现在本词典的词目中);以及一个概略的生物分类。

在第 ix 页可以找到这本《科技大词典》的使用说明,包括了词条排序、词条格式、参见等等。发音表则请参见第 xvii 页。

《麦格劳-希尔科技大词典》第六版仍然秉持同时为科学同仁和普通读者服务的精神,为他们带来高质量的信息,并为科学教育和技术普及作出贡献。

How to Use the Dictionary 如何使用这本词典

I. 词条排序

本词典所收词条按照词目(即词条首词)的英文字母顺序排列。词目中的空格、连字符(-)、逗号(,)、斜线分隔号(/)和撇号(')均不参加排序。例如,正确的序列应为:

air-earth current
air ejector
airfield
air filter
AKF diagram

同样不参加排序(通常出现在化学条目中)的还有斜体字母、阿拉伯数字、小大写和希文字母。例如,下列词条出现在 A 字母中的顺序为:

***N*-acetyethanolamine**
 α -aminohydrocinnamic acid
***ortho*-aminophenol**
2-aminopropane

II. 词条格式

词条的基本格式为:黑体词目、小大写的学科标签、白体英文释义、中文学科标签和中文对应词:

term [FIELD] Definition. 【学科】对应词

中文部分圆括号(())表示可以省略或为解释性文字,方括号([])表示可置换的词语。

一个学科可能有多项释义,此时中文学科标签紧跟在英文的之后,各项释义用黑体阿拉伯数字表示:

term [FIELD] 【学科】**1.** Definition. 对应词 **2.** Definition. 对应词 **3.** Definition. 对应词

一个词条可能含有两个或以上的学科:

term [BOT] Definition. 【植】对应词 [GEOL] Definition. 【地质】对应词

参见词条的基本形式为:

term See 见 another term.

同一词条下也可能既有释义,又有参见:

term [BOT] Definition. 【植】对应词 [GEOL] 【地质】
See 见 another term.

III. 参见

参见词条将读者导向主词条。例如,查寻 average life 的读者会找到:

average life See 见 mean life.

读者于是转向 M 字母下的词条查找释义。

参见词条也可能是不同拼法、首字母缩拼词、缩略词或符号。例如:

aesthacyte See 见 esthacyte.

ASROC See 见 antisubmarine rocket.

at. wt See 见 atomic weight.

Au See 见 gold.

需要提醒读者的是,所参见的主词条可能含有不参加字母排序的成分。比如,下例中所参见的主词条应在字母 A 而不是 N 中去找:

ASC See 见 *N*-acetylsulfanyl chloride.

此外,还有另一种形式的参见,如下例:

term [BOT] 【植】 An equivalent name for = another term.

IV. ALSO KNOWN AS... 等

一项释义的最后可能会标注该词条的同义词、不同拼法、缩略词或其他信息,以 Also known as...、Also spelled...、Abbreviated...、Symbolized...、Derived from... 等表示。当一个词条不止一项释义时,这些短语的位置表明了其适用的范围。举例如下:

term [BOT] 【植】 **1.** Definition. Also known as **synonym**. 对应词 **2.** Definition. Symbolized **T**. 对应词
上例中,Also known as... 只适用于释义 1, Symbolized... 只适用于释义 2。

term [BOT] 【植】 **1.** Definition. 对应词 **2.** Definition. 对应词 [GEOL] Definition. Also known as **synonym**. 【地质】对应词
上例中,Also known as... 只适用于第二个学科。

term [BOT] 【植】 Also known as **synonym**. **1.** Definition. 对应词 **2.** Definition. 对应词 [GEOL] Definition. 【地质】对应词
上例中,Also known as... 对第一个学科中的两项释义均适用。

term Also known as **synonym**. [BOT] 【植】 **1.** Definition. 对应词 **2.** Definition. 对应词 [GEOL] Definition. 【地质】对应词
上例中,Also known as... 对两个学科中的所有释义皆适用。

V. 化学式

化学释义中表示物质用实验式(如 acetaldehyde 乙醛, C₂H₄O)或线形式(如 acrylic acid 丙烯酸, CH₂CHCOOH)皆可。

VI. 注音

所有词条皆按照第 xvii 页的发音表注音。通常音标只给一个,发音变化不再另注。缩略词和按字母一个一个发音的首字母缩拼词不标注音标。

Field Abbreviations 学科略语一览表

ACOUS 声	acoustics 声学
AERO ENG 航天	aerospace engineering 航空航天工程
AGR 农	agriculture 农业
ANALY CHEM 分析化学	analytical chemistry 分析化学
ANAT 解	anatomy 解剖学
ANTHRO 人	anthropology 人类学
ARCH 建筑	architecture 建筑学
ARCHEO 考古	archeology 考古学
ASTRON 天	astronomy 天文学
ASTROPHYS 天体物理	astrophysics 天体物理学
ATOM PHYS 原子物理	atomic physics 原子物理学
BIOCHEM 生化	biochemistry 生物化学
BIOL 生	biology 生物学
BIOPHYS 生物物理	biophysics 生物物理学
BOT 植	botany 植物学
BUILD 建造	building construction 房屋建造
CELL MOL 细胞分子	cell and molecular biology 细胞和分子生物学
CHEM 化	chemistry 化学
CHEM ENG 化学工程	chemical engineering 化学工程
CIV ENG 土木	civil engineering 土木工程
CLIMATOL 气候	climatology 气候学
COMMUN 讯	communications 通信
COMPUT SCI 计	computer science 计算机科学
CONT SYS 控制	control systems 控制系统学
CRYO 低温	cryogenics 低温物理学
CRYSTAL 晶体	crystallography 晶体学
DES ENG 设计	design engineering 设计工程
ECOL 生态	ecology 生态学
ELEC 电	electricity 电学
ELECTR 电子	electronics 电子学;电子技术
ELECTROMAG 电磁	electromagnetism 电磁学
EMBRYO 胚胎	embryology 胚胎学
ENG 工程	engineering 工程学
ENG ACOUS 工程声学	engineering acoustics 工程声学
EVOL 进化	evolution 生物进化学
FL MECH 流体力学	fluid mechanics 流体力学
FOOD ENG 食	food engineering 食品工程
FOR 林	forestry 林业
FOREN SCI 法医	forensic science 法医学
GEN 遗传	genetics 遗传学
GEOCHEM 地球化学	geochemistry 地球化学
GEOD 测地	geodesy 大地测量学
GEOGR 地理	geography 地理学
GEOL 地质	geology 地质学
GEOPHYS 地球物理	geophysics 地球物理学
GRAPHICS 平面造型	graphic arts 平面造型艺术;摄影术;印刷术
HISTOL 组织	histology 组织学
HOROL 钟表	horology 测时法;钟表制造术
HYD 水	hydrology 水文学
IMMUNOL 免疫	immunology 免疫学
IND ENG 工业工程	industrial engineering 工业工程
INORG CHEM 无机化学	inorganic chemistry 无机化学
INV ZOO 无脊椎动物	invertebrate zoology 无脊椎动物学

LAP 宝石	lapidary 宝石学; 宝石雕琢术
LING 语	linguistics 语言学
MAP 制图	mapping 制图术
MATER 材	materials 材料学
MATH 数	mathematics 数学
MECH 力	mechanics 力学
MECH ENG 机械工程	mechanical engineering 机械工程
MED 医	medicine 医学
MET 冶	metallurgy 冶金学
METEOROL 气象	meteorology 气象学
MICROBIO 微生物	microbiology 微生物学
MIN ENG 采矿	mining engineering 矿业工程
MINERAL 矿	mineralogy 矿物学
MYCOL 真菌	mycology 真菌学
NAV 航	navigation 航行学; 导航术
NAV ARCH 造船	naval architecture 造船学
NEUROSCI 神经	neuroscience 神经科学
NUCLEO 核子	nucleonics 核子学
NUC PHYS 核物理	nuclear physics 核物理学
OCEANOGR 海	oceanography 海洋学
OPTICS 光	optics 光学
ORD 军	ordnance 军械
ORG CHEM 有机化学	organic chemistry 有机化学
PALEOBOT 古植	paleobotany 古植物学
PALEON 古生	paleontology 古生物学
PARTIC PHYS 粒子	particle physics 粒子物理学
PATH 病理	pathology 病理学
PETR 岩	petrology 岩石学
PETRO ENG 石油工程	petroleum engineering 石油工程
PHARM 药	pharmacology 药理学
PHYS 物	physics 物理学
PHYS CHEM 物理化学	physical chemistry 物理化学
PHYSIO 生理	physiology 生理学
PL PATH 植物病理	plant pathology 植物病理学
PL PHYS 等离子	plasma physics 等离子体物理学
PSYCH 心	psychology 心理学
QUANT MECH 量子	quantum mechanics 量子力学
RELAT 相对论	relativity 相对论
SCI TECH 科技	science and technology 科技
SOLID STATE 固体物理	solid-state physics 固体物理学
SPECT 光谱	spectroscopy 光谱学
STAT 统计	statistics 统计学
STAT MECH 统计力学	statistical mechanics 统计力学
SYS ENG 系统工程	systems engineering 系统工程
SYST 分类	systematics 分类学
TEXT 纺	textiles 纺织工业
THERMO 热力	thermodynamics 热力学
VERT ZOO 脊椎动物	vertebrate zoology 脊椎动物学
VET MED 兽医	veterinary medicine 兽医学
VIROL 病毒	virology 病毒学
ZOO 动	zoology 动物学

Scope of Fields 学科说明

acoustics 声学—The science of the production, transmission, and effects of sound.

aerospace engineering 航空航天工程—The branch of engineering pertaining to the design and construction of aircraft and space vehicles and of power units, and dealing with the special problems of flight in both the earth's atmosphere and space, such as in the flight of air vehicles and the launching, guidance, and control of missiles, earth satellites, and space vehicles and probes.

agriculture 农业—The production of plants and animals useful to humans, involving soil cultivation and the breeding and management of crops and livestock.

analytical chemistry 分析化学—The science of the characterization and measurement of chemicals; qualitative analysis is concerned with the description of chemical composition in terms of elements, compounds, or structural units, whereas quantitative analysis is concerned with the measurement of amount.

anatomy 解剖学—The branch of morphology concerned with the gross and microscopic structure of animals, especially humans.

anthropology 人类学—The study of the interrelations of biological, cultural, geographical, and historical aspects of the human race.

archeology 考古学—The scientific study of the material remains of the cultures of historical and prehistorical peoples.

architecture 建筑学—The art or practice of designing structures, especially habitable structures in accordance with principles determined by esthetic and practical or material considerations.

astronomy 天文学—The science concerned with celestial bodies and with the observation and interpretation of radiation received from the component parts of the universe.

astrophysics 天体物理学—The branch of astronomy that treats of the physical properties of celestial bodies, such as luminosity, size, mass, density, temperature, and chemical composition, and their origin and evolution.

atomic physics 原子物理学—The branch of physics concerned with the structures of the atom, the characteristics of the electrons and other elementary particles of which the atom is composed, the arrangement of the atom's energy states, and the processes involved in the radiation of light and x-rays.

biochemistry 生物化学—The study of the chemical substances that occur in living organisms, the processes by which these substances enter into or are formed in the organisms and react with each other and the environment, and the methods by which the substances and processes are identified, characterized, and measured.

biology 生物学—The science of living organisms.

biophysics 生物物理学—The science that uses the experimental and theoretical approaches of physics to study the mechanisms of biological processes.

botany 植物学—That branch of biology dealing with the structure, function, diversity, evolution, reproduction, and utilization of plants and their interactions within the environment.

building construction 房屋建造—The technology of assembling materials into a structure, especially one designated for occupancy.

cell and molecular biology 细胞和分子生物学—The study of the structures, functions, and molecular aspects (proteins, enzymes, nucleic acids) of the living cell.

chemical engineering 化学工程—A branch of engineering which involves the design and operation of chemical plants.

chemistry 化学—The scientific study of the properties, composition, and structure of matter, the changes in structure and composition of matter, and accompanying energy changes.

civil engineering 土木工程—The planning, design, construction, and maintenance of fixed structures and ground facilities for industry, for transportation, for use and control of water, for occupancy, and for harbor facilities.

climatology 气候学—That branch of meteorology concerned with the mean physical state of the atmosphere together with its statistical variations in both space and time as reflected in the weather behavior over a period of many years.

communications 通信—The science and technology by which information is collected from an originating source; converted into a form suitable for transmission; transmitted over a pathway such as a satellite channel, underwater acoustic channel, telephone cable, or fiberoptic link; and reconverted into a form suitable for interpretation by a receiver.

computer science 计算机科学—The study of computing, including computer hardware, software, programming, networking, database systems, information technology, interactive systems, and security.

control systems 控制系统学—The study of those systems in which one or more outputs are forced to change in a desired manner as time progresses.

cryogenics 低温物理学—The science of producing and maintaining very low temperatures, of phenomena at those temperatures, and of technical operations performed at very low temperatures.

crystallography 晶体学—The branch of science that deals with the geometric description of crystals, their internal arrangement, and their properties.

design engineering 设计工程—The branch of engineering concerned with the design of a product or facility according to generally accepted uniform standards and procedures, such as the specification of a linear dimension, or a manufacturing practice, such as the consistent use of a particular size of screw to fasten covers.

ecology 生态学—The study of the interrelationships between organisms and their environment.

electricity 电学—The science of physical phenomena involving electric charges and their effects when at rest and when in motion.

electromagnetism 电磁学—The branch of physics dealing with the observations and laws relating electricity to magnetism, and with magnetism produced by an electric current.

electronics 电子学;电子技术—The technological area involving the manipulation of voltages and electric currents through the use of various devices for the purpose of performing some useful action with the currents and voltages; this field is generally divided into analog electronics, in which the signals to be manipulated take the form of continuous currents or voltages, and digital electronics, in which signals are represented by a finite set of states.

embryology 胚胎学—The study of the development of the organism from the zygote, or fertilized egg.

engineering 工程学—The science by which the properties of matter and the sources of power in nature are made useful to humans in structures, machines, and products.

engineering acoustics 工程声学—The field of acoustics that deals with the production, detection, and control of sound by electrical devices, including the study, design, and construction of such things as microphones, loudspeakers, sound recorders and reproducers, and public address systems.

evolution 生物进化学—The processes of biological and organic change in organisms by which descendants come to differ from their ancestors, and a history of the sequence of such change.

fluid mechanics 流体力学—The science concerned with fluids, either at rest or in motion, and dealing with pressures, velocities, and accelerations in the fluid, including fluid deformation and compression or expansion.

food engineering 食品工程—The technical discipline involved in food manufacturing and processing.

forensic science 法医学—The recognition, collection, identification, individualization, and interpretation of physical evidence, and the application of science and medicine for criminal and civil law or regulatory purposes.

forestry 林业—The science of developing, cultivating, and managing forest lands for wood, forage, water, wildlife, and recreation; the management of growing timber.

genetics 遗传学—The science concerned with biological inheritance, that is, with the causes of the resemblances and differences among related individuals.

geochemistry 地球化学—The field that encompasses the investigation of the chemical composition of the earth, other planets, and the solar system and universe as a whole, as well as the chemical processes that occur within them.

geodesy 大地测量学—The subdivision of geophysics which includes determinations of the size and shape of the earth, the earth's gravitational field, and the location of point fixed to the earth's crust in an earth-referred coordinate system.

geography 地理学—The science that deals with the description of land, sea, and air and the distribution of plant and animal life, including humans.

geology 地质学—The study or science of earth, its history, and its life as recorded in the rocks; includes the study of the geologic features of an area, such as the geometry of rock formations, weathering and erosion, and sedimentation.

geophysics 地球物理学—The branch of geology in which the principles and practices of physics are used to study the earth and its environment, that is, earth, air, and (by extension) space.

graphic arts 平面造型艺术;摄影术;印刷术—The fine and applied arts of representation, decoration, and writing or printing on flat surfaces together with the techniques and crafts associated with each; includes painting, drawing, engraving, etching, lithography, photography, and printing arts.

histology 组织学—The study of the structure and chemical composition of animal tissues as related to their function.

horology 测时法;钟表制造术—The science of time measurement and the principles and technology of constructing time-measuring instruments.

hydrology 水文学—The science dealing with all aspects of the waters on earth, including their occurrence, circulation, and distribution; their chemical and physical properties; and their reaction with the environment, including their relation to living things.

immunology 免疫学—The division of biological science concerned with the native or acquired resistance of higher animal forms and humans to infection with microorganisms.

industrial engineering 工业工程—A branch of engineering dealing with the design, development, and implementation of integrated systems of humans, machines, and information resources to provide products and services.

inorganic chemistry 无机化学—The branch of chemistry that deals with reactions and properties of all chemical elements and their compounds, excluding hydrocarbons but usually including carbides and other simple carbon compounds (such as CO₂, CO, and HCN).

invertebrate zoology 无脊椎动物学—The branch of zoology concerned with the taxonomy, behavior, and morphology of invertebrate animals.

lapidary 宝石学;宝石雕琢术—The study relating to precious stones or the art of cutting them.

linguistics 语言学—The study of the structure, meaning, and development of language and the production of speech, encompassing the subfields of grammatical theory, semantics, anthropological and sociological linguistics, psycholinguistics, neurolinguistics, and phonetics (the sounds associated with language), among others.

mapping 制图术—The art and practice of making a drawing or other representation, usually on a flat surface, of the whole or part of an area (as the surface of the earth or some other planet), indicating relative position and size according to a specified scale or projection of selected features, such as countries, cities, rock formations, or bodies of water.

materials 材料学—A multidisciplinary field concerned with the properties and uses of materials in terms of composition, structure, and processing.

mathematics 数学—The deductive study of shape, quantity, and dependence; the two main areas are applied mathematics and pure mathematics, the former arising from the study of physical phenomena, the latter involving the intrinsic study of mathematical structures.

mechanical engineering 机械工程—The branch of engineering concerned with energy conversion, mechanics, and mechanisms and devices for diverse applications, ranging from automotive parts through nanomachines.

mechanics 力学—The branch of physics which seeks to formulate general rules for predicting the behavior of a physical system under the influence of any type of interaction with its environment.

medicine 医学—The study of cause and treatment of human disease, including the healing arts dealing with diseases which are treated by a physician or a surgeon.

metallurgy 冶金学—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 气象学—The science concerned primarily with the observation of the atmosphere and its phenomena, including temperature, density, winds, clouds, and precipitation.

microbiology 微生物学—The science and study of microorganisms and of antibiotic substances.

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

mining engineering 矿业工程—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 真菌学—The branch of biological science concerned with the study of fungi.

naval architecture 造船学—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 航行学; 导航术—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 神经科学—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 核物理学—The study of the characteristics,

behavior, and internal structure of the atomic nucleus.

nucleonics 核子学—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 海洋学—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 光学—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 军械—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 有机化学—The study of the structure, preparation, properties, and reactions of carbon compounds.

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

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

particle physics 粒子物理学—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 病理学—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 石油工程—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 岩石学—The branch of geology dealing with the origin, occurrence, structure, and history of rocks, especially igneous and metamorphic rocks.

pharmacology 药理学—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 物理化学—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 物理学—The science concerned with those aspects of nature which can be understood in terms of elementary principles and laws.

physiology 生理学—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 植物病理学—The branch of botany concerned with diseases of plants.

plasma physics 等离子体物理学—The study of highly ionized gases.

psychology 心理学—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 量子力学—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 相对论—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 科技—The study of the natural sciences and the application of this knowledge for practical purposes.

solid-state physics 固体物理学—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.

spectroscopy 光谱学—The branch of physics concerned with the production, measurement, and interpretation of electromagnetic spectra arising from either emission or absorption of radiant energy by various substances.

statistical mechanics 统计力学—That branch of physics which endeavors to explain and predict the macroscopic properties and behavior of a system on the basis of the known characteristics and interactions of the microscopic constituents of the system, usually when the number of such constituents is very large.

statistics 统计学—The science dealing with the collection, analysis, interpretation, and presentation of masses of numerical data.

systematics 分类学—The science of animal and plant classification.

systems engineering 系统工程—The branch of engineering dealing with the design of a complex interconnection of many elements (a system) to maximize an agreed-upon measure of system performance.

textiles 纺织工业—The area of industry involving the production of fibers, filaments, or yarn, and the cloth made from these materials.

thermodynamics 热力学—The branch of physics which seeks to derive, from a few basic postulates, relations between properties of substances, especially those which are affected by changes in temperature, and a description of the conversion of energy from one form to another.

vertebrate zoology 脊椎动物学—The branch of zoology concerned with the taxonomy, behavior, and morphology of vertebrate animals.

veterinary medicine 兽医学—The branch of medical practice which treats the diseases and injuries of animals.

virology 病毒学—The science that deals with the study of viruses.

zoology 动物学—The science that deals with the taxonomy, behavior, and morphology of animal life.

Pronunciation Key 发音表

Vowels 元音

a	as in bat, that
ā	as in bait, crate
ä	as in bother, father
e	as in bet, net
ē	as in beet, treat
i	as in bit, skit
ī	as in bite, light
ō	as in boat, note
ó	as in bought, taut
ù	as in book, pull
ü	as in boot, pool
ə	as in but, sofa
aʊ	as in crowd, power
óɪ	as in boil, spoil
yə	as in formula, spectacular
yü	as in fuel, mule

Semivowels/Semiconsonants 半元音/半辅音

w	as in wind, twin
y	as in yet, onion

Stress (Accent) 重音

'	precedes syllable with primary stress 主重音
ˈ	precedes syllable with secondary stress 次重音
ˑ	precedes syllable with variable or indeterminate primary/secondary stress 主次重音可变化或不确定

Consonants 辅音

b	as in bib, drible
ch	as in charge, stretch
d	as in dog, bad
f	as in fix, safe
g	as in good, signal
h	as in hand, behind
j	as in joint, digit
k	as in cast, brick
<u>k</u>	as in Bach (used rarely 罕用)
l	as in loud, bell
m	as in mild, summer
n	as in new, dent
<u>n</u>	indicates nasalization of preceding vowel 表示前面元音的鼻音化
ŋ	as in ring, single
p	as in pier, slip
r	as in red, scar
s	as in sign, post
sh	as in sugar, shoe
t	as in timid, cat
th	as in thin, breath
<u>th</u>	as in then, breathe
v	as in veil, weave
z	as in zoo, cruise
zh	as in beige, treasure

Syllabication 音节划分

- indicates syllable boundary when following syllable is unstressed 分音节点

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A

a See 见 ampere; atto-

aΩ See 见 abohm.

(aΩ)⁻¹ See 见 abmho.

Å See 见 angstrom.

Å See 见 angstrom.

A + See 见 A positive.

aA See 见 abampere.

AA See 见 anti-aircraft.

AAA See 见 anti-aircraft artillery.

aa channel [GEOL] A narrow, sinuous channel in which a lava river moves down and away from a central vent to feed an aa lava flow. 【地质】块熔岩通道 {ä'ä'chan·əl}

aAcm² See 见 abampere centimeter squared.

aA/cm² See 见 abampere per square centimeter.

aa lava See 见 block lava. {ä'ä'lä·və}

Aalenian [GEOL] Lowermost Middle or uppermost Lower Jurassic geologic time. 【地质】阿连阶 {ə'lēn·ē·ən}

AAM See 见 air-to-air missile; anti-aircraft missile.

A AND NOT B gate See 见 AND NOT gate. {ä'an nót'bēgāt}

aapamoor [ECOL] A moor with elevated areas or mounds supporting dwarf shrubs and sphagnum, interspersed with low areas containing sedges and sphagnum, thus forming a mosaic. 【生态】丘泽, 高低位镶嵌沼泽 {äp·ə·mūr}

aardvark [VERT ZOO] A nocturnal, burrowing, insectivorous mammal of the genus *Orycteropus* in the order Tubulidentata. Also known as **earth pig**. 【脊椎动物】土豚 {ärd·värk}

AARDVARK
土豚



The aardvark (*Orycteropus afer*), a nocturnal, burrowing animal ranging from Ethiopia to southern Africa. 土豚, 一种夜间活动的穴居型动物, 生活在埃塞俄比亚到南部非洲的地区。

aardwolf [VERT ZOO] *Proteles cristatus*. A hyenalike African mammal of the family Hyaenidae. 【脊椎动物】土狼 {ärd·wulf}

Aaron's rod [ARCH] A decorative rounded molding on which are entwined a single serpent and sometimes vines and leaves. 【建筑】亚伦杖装饰, 绕蛇杆形装饰 {ä'r·ənz'räd}

a axis [CRYSTAL] One of the crystallographic axes used as reference in crystal description, usually oriented horizontally, front to back. 【晶体】a 晶轴 [GEOL] The direction of movement or

transport in a tectonite. 【地质】a 轴 [MECH ENG] The angle that specifies the rotation of a machine tool about the x axis. 【机械工程】a 轴 {ä'ak·sis}

ab- [ELECTROMAG] A prefix used to identify centimeter-gram-second electromagnetic units, as in abampere, abcoulomb, abfarad, abhenry, abmho, abohm, and abvolt. 【电磁】(用于构成 CGS 电磁制单位名称) {ab}

ABA See 见 abscisic acid.

abac See 见 nomograph. {ə'bak}

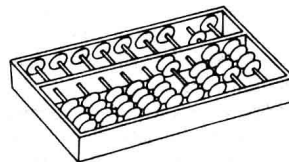
abaca [BOT] *Musa textilis*. A plant of the banana family native to Borneo and the Philippines, valuable for its hard fiber. Also known as **Manila hemp**. 【植】蕉麻 {ä·bä·kä or ä·bə·kä}

abactinal [INV ZOO] In radially symmetrical animals, pertaining to the surface opposite the side where the mouth is located. 【无脊椎动物】离辐的, 反口的 {ä'bäkt·in·əl}

abacus [ARCH] A slab forming the topmost division of the capital of a column. 【建筑】(圆柱)顶板, 冠板 [MATH] An instrument for performing arithmetical calculations manually by sliding markers on rods or in grooves. 【数】算盘 {ä'bä·kəs}

ABACUS

算盘



Drawing of an abacus. 算盘图。

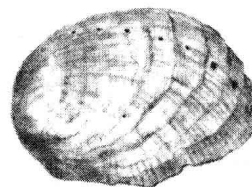
abaft [NAV ARCH] In a direction farther aft in a ship than a specified reference position, such as abaft the mast. 【造船】在船尾; 向船尾 {ə'bäft}

abalienation [PSYCH] Mental deterioration or derangement. 【心】精神错乱, 心理痴呆 {äb·äl·yə'nä·shən}

abalone [INV ZOO] A gastropod mollusk composing the single genus *Haliotis* of the family Haliotidae. Also known as **ear shell**; **ormer**; **paua**. 【无脊椎动物】鲍 {äb·ə'lō·nē}

ABALONE

鲍



Typical abalone ear-shaped shell perforated by pores. 典型耳形鲍壳, 上有气孔。

abalyne [ORG CHEM] A liquid rosin that is a methyl ester of abietic