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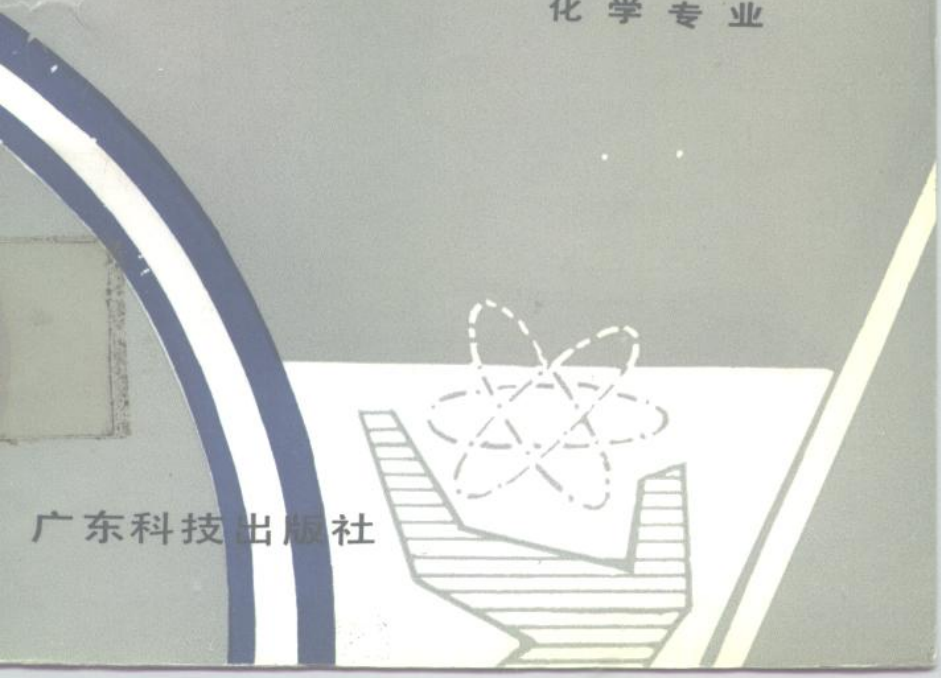
科技英语

第三册

化学专业



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初、中级技术人员培训教材

科技英语

第三册（化学专业）

English for Science and Technology

Book 3

叶庆昌　郭洁珍　编

罗冠球　审校

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内容简介

《科技英语》是为科技人员学习英语而编写的系列教材，分为五册。

本书是《科技英语》第三册（化学专业）本书教材均选自国外的专业书刊，内容涉及普通化学、无机化学、有机化学、理论化学、定性分析、仪器分析和化学命名等。附有课文注释、难句和语法分析、汉译以及有针对性的练习作业等。

本书既可作为化学专业中级科技英语培训班的培训教材，也适合于化学专业大专院校的学生和具有中等英语基础的化学专业的科技人员、工人自学之用。

前　言

《科技英语》共五册。第一、二册分别为基础部分和提高部分，内容包括了科技人员必须掌握的基本知识；第三、四、五册为专业部分，分为电类、化工类和建筑类英语，供对口专业选用。

本书是《科技英语》第三册(化学专业英语)，是继基础部分和提高部分而编写的。目的是使学完第一、二册或相应教材的化学专业科技人员能在短期内掌握本专业的英语知识，提高阅读和翻译专业英文书刊、资料的能力。

本书共有课文二十篇，阅读材料二十篇。教材均选自国外的专业书刊，内容涉及普通化学、无机化学、有机化学、理论化学、定性分析、定量分析、仪器分析和化学命名等。每篇课文后附有词汇词组(约900个)，课文注释(包括难句的语法分析和汉译)以及练习。书后有附录(包括主要的无机，有机化合物的命名，化学专业用的词头、词尾和化学上常用的略号)和总词汇表，便于学习和查阅。

本书由叶庆昌、郭洁珍主编；赵玉芳、干丽蓉参加部分编写工作，并承中山大学外语系罗冠球副教授审阅和提供了有益的意见。

限于编者的水平，书中谬误在所难免，敬请读者指正。

编　者

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Lesson One

Text

Chemistry

Chemistry is concerned with the composition, structure, and properties of substances, the transformation of these substances into others by reactions, and the different kinds of energy changes that accompany these reactions.[1] In the main, the chemist is interested in the properties and reactions of matter as it commonly exists on the earth. However, astronomical observations and space exploration give us every reason to believe that the general principles discussed are more widely applicable.

Since the field of chemistry covers an enormous range of activities, it is, in turn, subdivided loosely into many branches. It may be based on the kinds of substances that are involved; for example, organic chemistry deals with compounds containing the element carbon (of which there are literally millions) and inorganic chemistry deals with substances that do not contain this element. However, the distinctions are not clear cut. For example, the carbonate minerals

are regarded as inorganic even though they contain carbon.

Another classification scheme focuses on the types of operations and reactions that one may perform. Two of the earliest major areas of chemistry were analytical chemistry, the determination of the identity and the proportions of the components of a compound or of a mixture, and synthetic chemistry, the creation of one substance from others.[2] Still another way of subdividing the field of chemistry is on the basis of its overlap with other fields thus one finds references to physical chemistry, biochemistry, geochemistry, cosmochemistry, and so on. Finally, the contrasting phrases "theoretical chemistry" and "descriptive chemistry" are often used to refer to the concepts, principles, and theories on the one hand and to the experimentally observed facts on the other.

Many of the experimental methods of modern chemistry were developed originally by men and women regarded as physicists——for example, the methods of spectroscopy and those of structure determination by the diffraction of X rays. Similarly, modern theoretical chemistry is based chiefly on thermodynamics, statistical mechanics, and quantum mechanics, all originally regarded as fields of theoretical physics. The interaction has not all been one-sided, however, many of the ideas important in modern physics came

originally from chemistry. The atomic nature of matter was first recognized quantitatively by John Dalton (1766-1844) and was part of chemists' thinking for about a century before most physicists accepted it without reservation. The interactions of chemistry with the other nominally distinct branches of science, most notably biology and geology, have also been numerous and important.

A word of caution is needed about the vocabulary of chemistry. You will encounter many new terms, most of which have quite precisely defined meanings. Not only must you learn these meanings carefully so that you understand how to use the terms and how they differ from related ones, but sometimes you must avoid confusion with popular usage of the same words that is usually (though not always) broader and vaguer[3]. Thus, the terms energy, work, heat, and force have more restricted meanings in physics and chemistry than in ordinary parlance; on the other hand, the words salt and alcohol have more general meanings, referring to classes of substances rather than to specific ones. A few scientific terms have multiple meanings, and while each meaning is quite precise, only the context makes it possible to decide which of them applies in any particular case. [4]For example, the term neutral may refer to the absence of an excess of positive or negative charge, or to the absen-

ce of an excess of acid or base. Such possible ambiguities will often be pointed out, but you should be alert for them.

New Words

1.transformation [ˌtrænsfə'meiʃən]*n*.变化
2.accompany [ə'kʌmpəni] *v*.伴随
3.commonly ['kɔmənli]*ad*.通常地；一般地
4.astronomical [ˌæstrə'nɔmikəl]*a*.天文学的
5.observation [ˌɔbzə(:)'veiʃən]*n*.观察
6.principle ['prinsəpl]*n*.原理
7.enormous [i'nɔ:məs]*a*.巨大的；庞大的
8.subdivide['sʌbdi'vaid]*v*.再分
9.distinction [dis'tiŋkʃən] *n*.区别；特征
10.scheme [ski:m]*n*.系统
11.perform [pə'fɔ:m]*v*.执行；实行
12.identity [ai'dentiti]*n*.本质；同一(性)
13.creation [kri'eiʃən]*n*.创造
14.overlap ['ouvəlæp]*n*.重迭
15.biochemistry ['baiou'kemistri]*n*.生物化学
16.geochemistry [ˌdʒi(:)ou'kemistri]*n*.地球化学
17.cosmochemistry ['kɔzmou'kemistri]*n*.宇宙(天体)化学
18.contrast [kən'træst]*v*.对比；
['kɔntræst]*n*.对照
19.phrase [freiz]*n*.短语；习惯用语
20.spectroscopy [spek'trɔskəpi]*n*.光谱学
21.diffraction [di'frækʃən] *n*.衍射
22.chiefly ['tʃi:fli]*ad*.主要地；多半
23.thermodynamics ['θə:moudai'næmiks]*n*.热力学

24.quantum ['kwɔntəm]*n.* 量子

25.interaction [intə'rækʃən] *n.*相互作用

26.recognize ['rekəgnaiz]*v.* 认识；承认

27.quantitatively ['kwɔntitətivli]*ad.*定量地

28.reservation [,rezə'veiʃən]*n.*保留；保存

29.nominally ['nɔminəli]*ad.* 名义上地

30.notably ['noutəbli]*ad.*显著地；值得注意地

31.caution ['kɔ:ʃən] *n.*当心

32.vocabulary [və'kæbjuləri]*n.*词汇

33.encounter [in'kauntə]*v.* 碰到；遇见

34.term [tə:m]*n.*术语

35.precisely [pri'saisli]*ad.* 恰当地；精确地

36.avoid [ə'vɔid]*v.*避免

37.confusion [kən'fju:ʒən] *n.*混乱；混同

38.popular ['pɔpjulə]*a.*普遍的

39.usage ['ju:zidʒ]*n.*用法

40.vague [veig]*a.*含糊的

41.force [fɔ:s]*n.*力；势

42.restrict [ris'trikt]*v.*限制

43.parlance ['pɑ:ləns]*n.*用语；说法

44.specific [spi'sifik]*a.*特殊的

45.multiple ['mʌltipl] *a.*多重的

46.particular [pə'tikjulə] *a.*特别的

47.excess [ik'ses]*n.*过剩

48.ambiguity [æmbi'gjuiti] *n.*二重性；含糊

49.alert [ə'lə:t]*a.*警觉的

Phrases and Expressions

1.in the main	主要；基本上
2.to be interested in …	对…感兴趣
3.space exploration	宇宙探测
4.in turn	依次；随后；而(轮到)

5.to deal with …	研究…；讨论…；涉及…
6.to be regarded as …	被认为是…
7.to focus on …	集中在…
8.on the basis of …	在…基础上；基于…
9.to refer to…	关于…；讲述…
10.to come from …	来自…
11.to differ from …	不同于…
12.to be pointed out	被指出

Notes

1.Chemistry is concerned with the composition, structure, and properties of substances, the transformation of those substances into others by reactions, and the different kinds of energy changes that accompany these reactions.

本句为主从复合句。主句主语为Chemistry，谓语为 is concerned，是系表结构，带有三个并列的介词短语作状语，即1.with the composition…of substances, 2.(with) the transformation…by reactions, 3.and (with)the different kinds…these reactions. 其中that accompany these reactions是定语从句，修饰changes。

译文："化学这门科学涉及到物质的成分、结构和性质，涉及到那些物质通过反应变为其他物质，并涉及到随着这些反应而引起的各种能量变化"。

2.Two of the earliest major areas of chemistry were analytical chemistry, the determination of the iden-

tity and the proportions of the components of a compound or of a mixture, and synthetic chemistry, the creation of one substance from others.

本句为简单句。主语为Two(代名词)，谓语为 were，表语为analytical chemistry和synthetic chemistry，介词短语of the earliest marjor areas of chemistry作定语修饰主语two, the determination of the identity… of a mixture是analytical chemistry的同位语，the creation…others是synthetic chemistry的同位语。

译文："两个最早而且重要的化学领域是分析化学和合成化学。分析化学是测定化合物或混合物的组分本质和比例；合成化学是用其他的物质来制成一种新的物质"。

3. Not only must you learn these meanings carefully so that you understand how to use the terms and how they differ from related ones, but sometimes you must avoid confusion with popular usage of the same words that is usually (though not always) broader and vaguer.

本句为并列的主从复合句。第一子句的主句主语为you，谓语为must learn，宾语为these meanings，此句为倒装句，因not only在句首，so that you understand…related ones 是目的状语从句说明 must learn。从句中的主语是 you，谓语为 understand，宾语为 how to use the terms（带有疑问副词的不定式短语），和 how they differ from related oues（宾语从句）。第二个子句由 but 连接，主句主语为 you，谓语为 must avoid，宾语为confusion，with popular usage…wosds是修饰confu-

sion的定语，that is usually…vaguer 是修饰usage的定语从句。

译文："你不仅要仔细地学习这些词义，以便懂得如何使用这些术语。如何把它们从有关的名词中区别开来，而且有时还要避免与相同的词的一般用法相混淆，因这些相同的词的用法(虽然不总是)一般用得较广泛较含蓄。

4. A few scientific terms have multiple meanings, and while each meaning is quite precise, only the context makes it possible to decide which of them applies in any particular case.

本句为并列句：第一子句：A few scientific terms …meanings；第二子句：(由and连接) only the context …case. 其主语为 context，谓语为 makes，it 为形式宾语，真正宾语为 to decide which…case，其中 which of them…case 是不定式 to decide 的宾语从句，while each meaning…precise 是说明 makes 的状语从句，possible为宾补。

译文："有少数学术性术语具有多义，尽管每个含义都非常明确，但只有在一定的上下文里才能决定使用哪一个。

Exercises

1. Translate the following sentences into Chinese:

(1) The search for means of separating has resulted in the numerous procedures of analitical chemistry, which enable the chemist to proce-

ed systematically in finding out what things are made of.

(2) Physical chemistry includes those areas of chemistry which involve an understanding of the physical principles of mass, motion, electricity, radiation, heat and related phenomena.

(3) Chemistry would thus be bewildering and hopeless were we not able to simplify it by selecting for special study a few kinds of matter that serve as types for the rest.

(4) In reality, not a single moment of time goes by in which we are not affected by a chemical substance or a chemical process.

(5) There are countless events that occur around us daily that can only be understood by applying chemistry.

2. Translate the following paragraph into Chinese:

Chemistry is regarded as a natural science; that is, a science concerned with the study of natural phenomena. It deals with the composition of substances as well as the changes that take place in them. This includes not only those substances that are found naturally, but synthetic substances as well. By knowing the composition of these various substances, and by understanding how changes occur in them, we are in a better position to control and use them to human benefit.