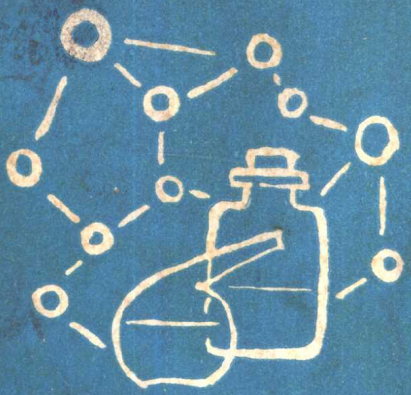
ENG LISH FOR STUDENTS OF CHEMISTRY

化学英语读本

胡树声 编著



外语教学与研究出版社

English For Students of Chemistry

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前　言

本书是为大学化学系和化工系高年级学生学完基础英语，过渡到阅读英文专业书籍而编写的。也适用于化学工程技术人员自学参考之用。全书共41课，除最后两课是以如何查阅参考文献为题外，其余各课都是按照一般化学的系统性，即从化学的基本概念、无机化学、分析化学一直到有机化学、物理化学、高分子化学而编写的。课文由浅入深，由简到繁，尽量接近一般科技英语文体，使读者能在自学的基础上，逐渐过渡到有能力阅读一般英语化学文献。

就内容来说，为使课文具有适当的坡度，本书有关化学概念和有关无机化学部分写得比较浅，内容也比较浓缩简单，而有机、物化和高分子化学方面的课文就相对地比较详细。但是，化学领域广阔、内容丰富，而本书篇幅又有限，所以只能作概括的论述，而以学习英语为主要目的。

全书包括单词约900个，词组134个，每一课新单词数量有较严的控制，为使读者能顺利地进行自学，词汇重复率较大，以便于温故知新。单词和词组统计以作者所在学校（北京工业学院）1974年所编统一英语教材为标准。各课附有译文及应有的注解。译文经胡实声和许邦兴两同志帮助审校，在此深表谢意。鉴于作者水平有限，不妥之处，敬希读者批评指正。

编著者：胡树声　　1980年4月

Contents

LESSON ONE

Some Fundamental Concepts

What is chemistry? Chemistry is a science. It deals with the composition, the structure, the change and the properties of substances. In chemistry, substances may be divided into elements, compounds and mixtures. All substances are forms of matter. Though there are thousands upon thousands of different kinds of substances, they may generally exist only in three states. They may be in the state of a gas, a liquid or a solid. However, the physical state of a substance may often be changed by various means. This change in state and other changes without the formation of new substances and change in composition are physical changes. There are also changes that are accompanied by the formation of new substances and change in composition. They are chemical changes. Chemical changes or* chemical reactions are classified into combination, decomposition, replacement and double replacement.

Vocabulary

fundamental	(fʌndə' mentl)	adj 基本的
concept	('kɔnsept)	n. 概念
structure	(' strʌkʧə)	n. 结构 构造
mixture	(' mikstʃə)	n. 混合物
means	(mi:nz)	n. 方法
formation	(fɔ:'meiʃən)	n. 形成

accompany	(ə'kʌmpəni)	vt. 陪同，伴随
combination	(kɔmbi'neiʃən)	n. 化合，结合
decomposition	(di:kɔmpə'ziʃən)	n. 分解
replacement	(ri'pleismənt)	n. 置换
double	('dʌbl)	adj. 双重的

Idioms and Phrases

deal with 研究，讨论，涉及
thousands upon thousands 成千上万

A Note to the Text

or 在这里用来引出表示与前面同一事物的词或短语，其中文意思是“也就是”。

LESSON TWO

Different Branches of Chemistry

In the old days there were only two fields of chemistry. One studies the inorganic matter and the other studies the organic matter. As production developed and our knowledge increased more branches appeared. Now in addition to inorganic and organic chemistry we have physical chemistry, radiochemistry, analytical chemistry and some others. Inorganic chemistry is a study of elemements and their compounds. Organic chemistry is the chemistry of the compounds of carbon. Physical chemistry has to do with the fundamental laws and theories of chemistry. Radiochemistry specializes in nuclear reactions and radioactive elements. Analytical chemistry limits its study to the methods of analysis of chemical compounds. All in all, each branch of chemistry has its own particular subject to deal with. (1)

A knowledge of chemistry is very useful. It is of great importance to the socialist construction and national defence of our country and the well-being of the people as well. (2)

Vocabulary

inorganic	(inɔ:'gænik)	adj. 无机的
organic	(ɔ:'gænik)	adj. 有机的
knowledge	('nɔlidʒ)	n. 知识

branch	(bra:ntʃ)	n. 分支
appear	(ə'piə)	vi. 出现
radiochemistry	('reidiou'kemistri)	n. 放射化学
analytical	(æ'nəlitikəl)	adj. 分析的
specialize	(speʃəlaiz)	vt., vi. 专门化，专攻
nuclear	('nju:kliə)	adj. 核的
radioactive	('reidiou'æktiv)	adj. 放射性的
limit	('limit)	vt., vi., n. 限制
analysis	(ə'næ1isis)	n. 分析
particular	(pə'tikjulə)	adj. 特殊的

Idioms and Phrases

in the old days	从前
in addition to	除……以外（还有）
have to do with	与……有关
all in all	总之
well-being	幸福，福利
as well	同样，也

Notes to the Text

1) to deal with 在这里用作定语，形容 subject。这个词组后面的宾语因为在前面已被明确而省略了。这类不定式作定语往往有这样的特点：从逻辑意义上讲，被说明（形容）的名词是动词不定式所表示的行为的对象。

2) as well 的意思是“同样”、“也”、“和”。它与 as well as 的意思同，但用法不同。as well 常放在句子的最后，而 as well as 则放在句子的中间。例如：

He gave me a book as well as a pen.

He gave me a book, and a pen as well.

（他除了给我一支笔外还给了我一本书）

LESSON THREE

Physical and Chemical Changes

Substances are constantly undergoing physical and chemical changes. Physical changes are changes in the condition or state of a substance. They do not at all change its composition or any of its properties, nor [1] do they give rise to any new substances. For example[2], when water boils or freezes forming steam or ice, a physical change takes place. We call it a physical change, because the composition of water, steam and ice are all the same. They are all composed of hydrogen and oxygen in the same proportion. They only differ in physical state.

A chemical change involves the disappearance of the original substances and the appearance of new ones. The new substances have completely different compositions and properties. Many chemical changes may be observed in our daily life. Whenever anything burns, there is a chemical change. Whenever anything decays, a chemical change is under way.

Some changes require energy while other changes give off energy, no matter whether they are physical or chemical. For instance[2], heat is required to change ice to water or water to steam. On the contrary, heat is given off when water freezes or steam condenses.

Vocabulary

constantly	('kɔnstəntli)	adv. 经常地，永恒地
ice	(ais)	n. 冰
freeze	(fri:z)	vt., vi. 冻结
proportion	(prə'pɔ:ʃən)	n. 比例
differ	('difə)	vi. 不同
involve	(in'vɔlv)	vt. 卷缠，包含
disappearance	(disə'piəriəns)	n. 消失
appearance	(ə'piəriəns)	n. 出现
completely	(kəm'pli:tli)	adv. 完全地
whenever	(hwen'evə)	adv. 无论何时
decay	(di'kei)	vt., vi. 腐烂
off	(ɔ:f)	adv., prep. 离开
require	(ri'kwaiə)	vt., vi. 需要
condense	(kən'dens)	vt. 凝结

Idioms and Phrases

give rise to 引起，导致，产生
under way 正在进行
give off 放出
no matter whether 不管是否
on the contrary 相反，与此相反

Notes to the Text

1) 在用 nor 表示“……也不”一类否定概念的情况下，通常用倒装句，其公式是nor＋助动词或情态动词＋主语(nor＋be, have, do ＋主语)，这里的 nor 是连接词，引出一个句子。

2) example 通常是具有代表性的。instance 则经常是 较个别的例子 其代表性较 example 小。

LESSON FOUR

Physical and Chemical Properties

Characteristics that enable us to recognize and distinguish among substances[1] are called the properties of the substances. These properties may on the whole[2] be divided into two classes: physical and chemical.

Physical properties are those that can be observed without changing the substances into some new kind of matter. The physical state, the colour, the odour, the taste, the density, the boiling point, the melting point, the conductivity of heat and electricity and so on are all physical properties.

The chemical properties of a substance are characteristic of the manner in which it reacts with other substances. These properties can be observed only when that substance undergoes a change in composition. Carbon has the capacity to combine with oxygen forming carbon dioxide[3]. Hydrogen is able to react with oxygen giving water. Such properties are classified as chemical in nature.

If we study the physical and chemical properties of two substances and find that they are identical, then the substances must be the same; if the properties are different, we can be sure that we are dealing with two different substances. So properties are signs by which we recognize substances[4].

Vocabulary

characteristic	('kæriktə' ristik)	n., adj. 特征；表示特性的
enable	(i'neibl)	vt. 使能
recognize	('rekəgnaiz)	vt., vi. 认识，认出
distinguish	(dis'tiŋgwiʃ)	vt., vi. 区别
colour(color)	('kʌlə)	n. 颜色
odour (odor)	('oudə)	n. 气味
taste	(teist)	n. 滋味
density	('densiti)	n. 密度
melt	(melt)	vt., vi. 融化
manner	('mænə)	n. 方式
capacity	(kə'pæsiti)	n. 能力
di-	(dai)	pref. 前缀，表示"二"
oxide	('ɔksaid)	n. 氧化物
nature	('neitʃə)	n. 性质
identical	(ai'dentikl)	adj. 完全相同的
sign	(sain)	n. 记号，符号

Idioms and Phrases

on the whole	大体上，总的来说
boiling point	沸 点
melting point	熔 点
and so on	等 等
in nature	性质上，实质上

Notes to the Text

1) 这里 recognize 是及物动词，distinguish 是不及物动词后面跟介词 among；substances 在这里作为共用宾语。

2) on the whole 是介词短语作状语，这类状语的位置往往是插在谓语的中间。

3) forming carbon dioxide 分词短语作状语，表示伴随情况。

4) by 在这里具有“借助于”的意思，by which we recognize substance 是带介词的定语从句。关系代词 which 作为介词的宾语。

LESSON FIVE

Elements, Compounds and Mixtures

Hydrogen is a gas. Oxygen, too, is a gas. We cannot get simpler substances from either of these two gases. These two gases and all other substances that cannot be decomposed by ordinary methods into simpler substances are called elements. But when hydrogen and oxygen combine to yield water, the water yielded can no longer be called an element. It is a compound. Compounds are substances composed of two or more elements combined in definite proportions. They can usually be decomposed into their constituent elements. Water may* be decomposed into hydrogen and oxygen by electrolysis, that is, by passing electric current through it. Other compounds may likewise be decomposed by special processes. To date 105 different elements have been identified. As for compounds, millions of them are known.

Besides elements and compounds we also have mixtures. A mixture is made up of two or more substances that are not chemically combined. They keep their individual properties and in general they can be separated by physical methods. Air is a mixture. It is a gas mixture. We can separate oxygen, nitrogen, argon, helium and other inert gases from it.

Vocabulary

decompose	(di:kəm'pouz)	vt., vi. 分解
yield	(ji:ld)	vt., vi., n. 产生;得率
constituent	(kən'stitjuənt)	adj., n. 组成的; 成分
electrolysis	(ilek'trɔlisis)	n. 电解
likewise	('laikwaiz)	adv. 同样地
special	('speʃəl)	adj. 特殊的
identify	(ai'dentifai)	vt. 识别, 认出
chemically	('kemikəli)	adv. 从化学角度上来说
individual	(indi'vidjuəl)	adj. 个别的
general	('dʒenərəl)	adj. 一般的
separate	('sepəreit)	vt. 分离
nitrogen	('naitridʒən)	n. 氮
argon	('a:gɔn)	n. 氩
helium	('hi:ljəm)	n. 氦
inert	(i'nə:t)	adj. 惰性的

Idioms and Phrases

that is 也就是
as for 至于
in general 一般说来, 总的来说

A Note to the Text

can 表示能力及可能性, 其否定式 cannot 表示不可能。
may 表示可能性及许可, 它所表示的可能性不如 can 所表示的那么肯定, 但在科技书中两者往往通用, 其间区别不是那么大。